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In preparing this composite of current institutional research methods and reports for colleges and universities, the editor sought papers which would prove useful to many institutions irrespective of their type, size, or goals. The 29 reports are grouped under the following major topics: (1) purposes and organization of institutional research, (2) self studies, (3) cost analysis, faculty load, and educational forecasting, (4) faculty satisfaction, (5) facilities, (6) student fees and costs, (7) student needs, satisfactions, and precollege and incollege success, and (8) summer activities of students. A number of the authors describe research projects which they directed. Many reports are accompanied by statistical tables, charts, and references.

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Current institutional research methods and reports for colleges and universities

BASIS FOR DECISION

L. J. LINS, EDITOR
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BASIS FOR DECISION

A Composite of Current Institutional Research Methods and Reports for Colleges and Universities

L. J. LINS

Professor and Coordinator of Institutional Studies, the University of Wisconsin, *Editor*

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FOREWORD

"The key to effective administration is the ability of the president and those who work with him to ask the right questions and then find the right answers. But the right answers to the right questions, whether they are specific in relation to a given institution or whether they are more comprehensive, must take into account all the relevant, factual data--the kind of data that only institutional research can provide."*

Through institutional research, whether as a function of a specific office or whether resulting from separate reports of various offices, problems facing institutions of higher learning are brought to light and bases for decisions provided. The need for evaluation may be as diverse as the purposes for which institutions are operated. Thus the conception of what institutional research encompasses may vary from one college or university to another.

In preparing this publication, the editor sought to provide reports some of which might be useful to persons in each institution irrespective of its type, size, or goals. With this in mind, manuscripts were solicited covering a wide range of topics.

This publication is presented as a service to persons interested in and concerned with institutional research. It is hoped that it will, at least in a small way, fill a felt need--that of providing an avenue for exchange of methods and results of research.

The editor is very grateful to the various authors for the manuscripts provided and for their cooperation in making our first publication of this type possible. Credit for the articles is reserved for the authors; should typographical errors appear, these are through my oversight. I appreciate also the efforts of Mrs. Elizabeth Hough, Edna Hasse, Allan Abell, and Robert Rees, of my staff for typing, proofing, and editorial assistance. Special thanks are due the late Professor A. S. Barr and Professor C. A. Schoenfeld for encouragement and offering the avenue for publication.

I respectfully dedicate this monograph to Dr. Barr, in recognition of his many kindnesses to me. His passing represents a great loss to many of us personally as well as to education in general.

L. J. LINS
Editor

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* A. J. Brumbaugh. Research Designed to Improve Institutions of Higher Learning (Washington, D. C.: American Council on Education, 1960), p. 2. (Reprinted with permission of the American Council on Education.)

THE JOURNAL OF EXPERIMENTAL EDUCATION
(Volume 31, Number 2, December 1962)

INSTITUTIONAL RESEARCH, PLANNING, AND POLITICS

LORING M. THOMPSON
Northeastern University, Boston

COLLEGES AND universities are now at the fountainhead of social change. They have teamed with government and industry to accelerate research in such areas as weapons systems, automation, space travel and communications. The consequences of this research will react through our social milieu and pose new political problems. In addition, they will affect the universities themselves, their social structure, their organization, and their methods of operation.

Proceding more slowly, a movement has begun for universities to study themselves and to plan consciously for changes within themselves. In the past, leadership and changes in universities have come about through strong presidents or influential faculty committees. Additional organizational patterns are now being developed so that universities will be better able to make consciously planned changes.

Institutional Research

One of these new patterns is institutional research. An office of institutional research in a university is expected to make studies about the university itself. Just what features are studied varies from institution to institution. Historically, institutional research may be traced back to self-studies of academic programs by faculties and faculty committees. More recently, enrollments and prospective enrollments have received attention from bureaus of institutional research. With the tapering off of the "veterans' bulge" in the late 1940's, university enrollments reached a temporary valley because of the small number of births during the depression 18 years earlier. However, enrollment projections emphasized that the future would not be like the present, for the rising birth-rates of the 1940's would bring in a "tidal wave" of enrollments. Seen in a broader perspective, this "tidal wave" is actually a cyclical fluctuation about the long range trend for this century. During the time since national records have been kept, enrollments have increased at an average rate of between three and four percent per year.

Projections of enrollments relate to another phase of institutional research, that of studying the capacity of the physical plant and its efficient utilization. Many universities have studied the utilization of classrooms and laboratories during normal working hours and have faced the uncomplimentary conclusion that their efficiency is very low. In some instances, improvements have been made by giving the responsibility for room assignments to the university registrar rather than letting each department or college control designated classrooms solely for its own convenience.

The college students themselves have been a focal point of some bureaus of institutional research, particularly when the director comes from the field of sociology or psychology.

Another focus of institutional research has developed in large state universities. Because legislators tend to make appropriations in terms of enrollments, the institutions have studied the cost of teaching not only the average student but also the freshman, sophomore, junior, and senior student. Cost accounting, taught by the universities for students preparing for business, has been applied to the universities themselves, the motivation being the usefulness of cost accounting data in obtaining state appropriations.

University Physical Planning

Distinct from the development of institutional research, there is another movement in the direction of conscious change in many of our universities today. This is the appointment of planning officers or the establishment of an office of university planning to deal with physical aspects of the campus and its buildings. The university planners draw up campus master plans and become involved in problems of land acquisition and land use and in broad questions of architectural design.

The university planning movement has been spurred by Section 112 of the Urban Renewal Act. Before the passage of this section, universities located in blighted urban areas were in difficult straits. Being tax exempt, they were not included in renewal programs aimed at increasing city income from the property tax. Land they dearly wanted for expansion could be assembled by the city through eminent domain, but only for other users participating in an urban renewal project.

Briefly, Section 112 provides distinctly new ground rules for the relation between an urban university and its host city. It makes it financially feasible for city officials working in co-operation with university planners to include the expansion of an urban campus as part of an urban renewal program. For this purpose, it is practically essential that a university have an official designated as a planning officer.

Strategic Research and Planning

In the broader sense of the term, university planning involves not only the physical campus but also the long range goals and objectives of the institution, the nature of its educational programs, the kind of students sought and the impact of its programs upon these students, together with the resources (funds) needed to conduct these programs and the means of acquiring these resources (tuition, grants, government appropriations, and fund-raising). Decisions on goals, programs, or fund-raising are strategic decisions of the institution. The decision as to whether or not to seek sponsored research, for example, is a strategic one. It will have a substantial impact upon the type of research on the university campus, the nature of its faculty, and therefore the nature of its students and its future enrollment.

At present, bureaus of institutional research have made few studies related to broader strategic questions such as this. But the university planner must answer these questions, implicitly or explicitly, in his physical plans. If the planning is to be a rational process, then it begins with the determination of long range goals and objectives, followed by identification of the educational methods to be used and the facilities required. Here the planner may readily become involved in pre-planning studies. His area of interest overlaps that of the institutional researcher. Whether the total effort is to be termed institutional research or planning will probably be determined by historical accident. What is important is that the knowledge of modern physical and social science be applied to the analysis of major problems facing the university.

Some Generalizations on Strategic Decisions

At this point, two propositions may be stated concerning the relation between strategic decisions and technical analysis, such as that involved in research, physical planning, operations analysis, or architectural design.

1) The more important, or more strategic the decision, the smaller is the amount of pertinent technical analysis.
2) At an increasing rate, technical analyses are being developed which are pertinent to the more important or more strategic decisions. In other words, advances in research and planning are reducing the extent to which the first proposition is true.

Examples which illustrate these propositions may be drawn from our modern urban society as well as from higher education. Business leaders once made decisions on new products or the location of facilities on the basis of their experience and judgment. Now corporations make extensive technical studies prior to a formal decision. With progress in operations research and management science, it is now becoming possible to make technical analyses of raw materials procurement, production, warehousing, inventory control and distribution--all as a single integrated system. Final decisions made by top management remain the sole responsibility of management, but more and more these decisions are made only after technical studies by persons highly trained in many fields of applied science.

Seen in this perspective, the movements of institutional research and physical planning in universities are part of an important trend within our modern society. According to the propositions stated above, these movements will grow and develop, encompassing subject matter which will make them more and more relevant to the major strategic decisions of universities.

University presidents and faculty committees will not be displaced by institutional research and planning. On the contrary, institutional research and planning can exist only when created and nurtured by presidents and faculties. In the future, one of the skills needed by university leaders will be that of selecting personnel for research and planning, together with providing resources and specifying the boundaries and objectives for the work of the specialists. Once the leaders have the benefit of research and planning work, their decisions will be less limited by their own experience and knowledge. They will be able to examine proposed changes with a better picture of what the consequences will be. Their concept of possible consequences will be derived from careful technical studies, the application of scientific knowledge by competent professional staff.

As this movement develops, we may visualize that future faculty committees will have at their disposal offices of institutional research and planning. These offices will be able to identify possible courses of action which will be realistic, feasible, and in line with the general goals of the institution. On the basis of accumulated scientific knowledge, they will be better able to estimate the consequences of each proposed project or future course of action.

A New Pattern in Politics

It is emphasized that the advent of institutional research and planning will not eliminate internal politics. It will not mean that important decisions will be strictly technical ones rather than political--using the word "political" in a broad sense to refer to the governing of a university. Faculty committees may well have more work to do rather than less because a good office of institutional research will raise questions, make the faculty more aware of evolving changes, and point out new courses of action which might be considered. To illustrate, an institutional research office might analyze college drop-outs. On the basis of other research studies, it might suggest to the faculty committees new policies and procedures to reduce the number of drop-outs. By itself, the committee could only bring together the opinions of its members on the drop-out problem; with the help of organized institutional research and planning, it can direct that inquiries be made first to pinpoint the problem, then to find solutions.

As institutional research and planning gathers momentum, it should be able to deal not only with problems encountered in the operation of current programs, such as enrollments and schedules, but also with more basic problems of adolescence, motivation, and of learning. It should be able to make long range studies and come to grips with methods for teaching creativity as well as academic excellence. It could make long-term studies of the whole educational process so that it can be better designed to give the younger generation a sense of initiative, responsibility and maturity.

In our era of rapid scientific progress and consequent social change, there are bound to be changes in educational institutions. To make institutional changes, new organizational devices are being developed--both in community politics and in university politics. Recognition is being given to professional specialists who are finding theoretical tools to deal first with minor, tactical decisions, then major or strategic ones. In university politics, this means that offices of institutional planning and research are becoming increasingly important. They will serve university presidents and faculty committees, providing a current, rational basis for leadership in education.

THE JOURNAL OF EXPERIMENTAL EDUCATION
(Volume 31, Number 2, December 1962)

PROGRAMMING THE UNKNOWN: GUIDELINES FOR THE CONDUCT OF INSTITUTIONAL RESEARCH

PHILIP H. TYRRELL
Rensselaer Polytechnic Institute

UNLIKE MOST other types of programming, such as working out instructional sequences or coding computer inputs, the programming of institutional research is programming the unknown. In establishing guidelines for the conduct of institutional research in the future, one must define concepts, describe assumptions, and formulate strategy. At Rensselaer Polytechnic Institute, programming the unknown has required the development of a rationale that includes all three of these fundamental steps.

Major Concepts

Institutional Research and Educational Research

For purposes of this discussion, institutional research is defined broadly as the methodical study of any problem connected with the operation of the instructional programs of a college or university, together with an attempt to implement a solution to each problem or otherwise effectively utilize the results of such research. This concept includes not only traditional data gathering, processing, and interpretation and the study of operational procedures, but also it includes those activities usually called "educational research," a term whose many acceptable definitions all pre-suppose disciplined, scholarly inquiry into the processes of teaching and learning.

This concept of institutional research is based on a spectrum of investigation so various as to encompass routine survey activity at one end and long, hard, and often lonely projects leading to significant discoveries at the other. In addition, there are implementing-action programs, providing feedback to the investigators. Indeed, there is not a spectrum of institutional research; there are spectra. Collectively, they involve programming the unknown.

The Individual Institution of Higher Education

An office of institutional research must have a frame of reference that defines, philosophically at least, the institution and its role in human affairs.

Most importantly, an institution of higher education should be a center of confluence for many social forces. Into its human and physical networks are swept all known human history as well as the turbulent discoveries of the moment, and from these dynamic networks of interaction flow the hypotheses that help shape tomorrow. Great institutions may have always had this image of themselves, and perhaps this is what Whitehead had in mind when, in Modes of Thought,[1] he said, "The task of a University is the creation of the future, so far as rational thought, and civilized modes of appreciation, can affect the issue. The future is big with every possibility of achievement and of tragedy." Centers of confluence, therefore, point out directions which, in fact, become hypotheses; these, in turn, become objectives, either for institutions or, in the case of very great colleges and universities, for man.

The Office of Institutional Research

The two preceding concepts find combination when one considers an office of institutional research also to be a center of confluence. As such, however, it should be a microcosm that facilitates, through its special kind of research, the activities of the macrocosmic, purposeful, life-liberating assembly of scholars who undertake those individual and collective tasks necessary to "the creation of the future." Not that institutional research is outside the bounds of scholarship; it both serves and is part of the intellectual community. With this image of itself, an office of institutional research may often find an area of great usefulness in the study and implementation of findings concerning an institution's human and physical networks, e.g., in network characteristics which facilitate or impede individual or collective creativity.

Also, for the institution, the image of confluence may help preclude the possibility of existence outside the main stream of history; for the office of institutional research, the image precludes existence as an impotent bystander in an institutional world of dynamic interaction. Thus, the tasks confronting institutional research include spectra of unknowns, and for this reason, guidelines constantly need to be developed for the future.

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[1] Alfred North Whitehead, Modes of Thought (New York: Capricorn Books, G. P. Putnam's Sons, 1958), p. 233.

Assumptions

Following the construction of a conceptual frame of reference, the effective conduct of institutional research requires the calculation of risk. Ideally, one should be able to estimate the degree of risk involved in at least five major assumptions concerning the individual institution:

1) That the institution is in a continuous process of strengthening the ethical sensitivity of its membership (institutional research results cannot always be accepted with serene objectivity; knotty ethical considerations may arise);
2) That effective communication loops exist or can be created, leading from the institutional research staff to top administration, to the faculty, and back to the research staff sometimes also including such other groups as the community, other institutions, and government agencies, so that feedback is inherent in all communications; and, further, that the basic communication loop be not too much in discrepancy with decision-making channels;
3) That there is or will be at least an average chance that the interests and abilities of present and projected institutional research staff will coincide with the demands imposed by required areas of investigation;
4) That the climate of the institution does or will permit institutional research to become a pervasive "idea," involving all institutional members, each to an appropriate degree;
5) That opportunities can be created for the institutional research staff not only to study defined problems but also to initiate investigations based on "intuitive" recognition of needs in order to discover unrecognized problems, analyze their importance, and pursue selected studies; likewise, that the research staff be so selected that its members will undertake obviously needed studies on a self-assigned basis, motivated by a desire for institutional improvement and the enhancement of systematized institutional knowledge as well as by a desire for personal professional development.

If the preceding assumptions can be made on a low-risk basis, the institution may not even need an office of institutional research. However, if they must be made on a high-risk basis, but with some expectation of a rising level of confidence, one might well proceed to an examination of strategy, which is an art, not a science, although it makes use of scientific methodology.

Elements of Strategy

On a theoretical level, some useful elements of strategy for the conduct of institutional research, in the context we are presupposing, may be outlined as follows:

1) Institutional research should not be merely the asking of and finding answers to questions; it should also be "the criticism of generality by methods derived from the specialism of science," to borrow from Whitehead[2] again as he defines "systematization," a process necessarily inherent in all research, as in philosophy. It may be observed that new ideas, in an institutional setting, often are born as generalities which need constructive criticism before they are susceptible to empirical investigation.
2) The criticism of generalities requires, to use current management science terminology, both a "generalist's" and a "specialist's" approach. The former is largely an administrative function; it provides an arena of speculation that comprises an overall view of the institutional context that the generality impinges upon. The latter is more actionable and more pragmatic; it probes, it verifies a negative or positive value. If positive, it provides transition to empirical inquiry if such is necessary. Institutional research, if boldly conceived, often profits from a generalist management, with specialist support.
3) Although "generality" sometimes has a bad connotation, its value as a mode of thought should not be underestimated. So little is known about the highly valued intuitive process that, until proved otherwise, it seems likely that an intuitive cognition may take the form of generality, as well as of specific insight. In evaluation, perhaps the first question should be, "Is this high-order or low-order generality?" Regardless, the ultimate question is importance, and the determination of importance of institutional ideas requires scrutiny - both by the generalist and by the specialist. Each one's mundane world can become strikingly illumined by the impact of what is really important; it is one responsibility of institutional research to keep the important always before the eyes of the institutional community.
4) The element of importance negates any distinction between what is applied or basic in institutional research. Having importance,

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[2] Ibid., p. 4

effective research becomes a function of talent, time and money; of these, the management of talent is most critical. Three methods are often necessary: direction, indirection, and non-direction. These are closely related to Assumptions 2 through 5, stated earlier.

Programming

Having a conceptual framework for existing or projected research activities together with assumptions and the elements of a theoretical strategy one asks, "What is programming?" Programming a homogeneous institutional research effort is the manipulation of events so as to attain ever-evolving objectives. If one has thought through his concepts, assumptions, and strategy, programming is not a mysterious process; mainly, it requires dexterity in matching a philosophy of operation with the demands of present and future urgencies. Whatever is important is urgent, although the converse is not always true.

The idea of programming the unknown depends, for its cogency, upon the ever-evolving objectives of the institution. However, the homogeneity of the typical institutional research effort is advantageous. Institutional objectives may be ever-evolving, but when they are pinpointed at any moment in time, programming to facilitate their attainment is a clear-cut, deploying-of-resources process.

End-Product

The desired end-product of creating guidelines is, of course, effective programming, and the effectiveness of institutional research programming can be judged only in terms of the individual institution and at such time as evaluation can be hazarded.

Rensselaer Polytechnic Institute, for example, has been developing the previously outlined rationale of institutional research for almost six years. At this moment, unknowns for tomorrow and for years ahead are being programmed, and re-programmed. At this moment, also, one can recapitulate Rensselaer's programming history in terms of achievement and of error and thereby place a value upon and refine the institutional research operation.

Programming is a continuous process, but, at any time, all of the events which it has patterned are vulnerable to and should be amenable to evaluation. This amenability would not be possible without the articulation of a rationale such as that described previously.

Institutional research, throughout American higher education, is now at a point, where a re-examination of concepts, assumptions, and strategy is necessary. Institutional researchers should take this re-examination upon themselves, lest others do it for them. The opportunity for honest inquiry, humbly pursued, may never have been greater for education; it certainly has never had the resources which exist or have been promised and which must be nurtured, paradoxically, with boldness and with care.

If institutional researchers achieve effective programming, they will facilitate immeasurably the activities of the assembly of scholars whom they serve and of whom they are a part. Concurrently, the total institution as a creative enterprise will be enabled to contemplate without despair a future that "is big with every possibility of achievement and of tragedy."

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INSTITUTIONAL RESEARCH AND AUTOMATION

EDWARD M. STOUT and IRMA HALFTER
DePaul University

AFTER COMPLETING initial self-studies, oftentimes suggested by accrediting agencies, many institutions of higher education, having a keen curiosity to know themselves, are reexamining their purposes and curricular implementations. Naturally, one of the purposes of such institutional self-study is to help improve the overall effectiveness of colleges and universities. It seems clear that any effective growth or development which culminates in lasting educational improvement must come from within the institution itself. A university must know itself before it can properly relate to its faculty, its students, its alumni, and its public at large.

Such self-examination is frequently concerned with questions such as, what are the goals of the institution and what are the characteristics of its present student body. If, for example, different goals and instructional methods are to be chosen by faculty and administration, would a student body with present characteristics retard the realization of those goals?

As a part of its continuing self-study, and in order to project institutional goals for the future, DePaul University decided upon the development of a research design that would provide as complete information as possible of the intellectual, psychological, and social characteristics of its students and how they learn through the college experience. It should be observed that the research was to be concerned primarily with the learners and then with the relation between certain learners' characteristics and a specific institution's goals.

Objective and Nature of Institutional Research

Before entering upon institutional research, it would be best, then, to define its purposes so it may be related to research as it is traditionally understood. To merit the title "research," institutional research, just as scientific investigation in the natural or social sciences, implies not only empirical evidence and method but also the primary objective of true research: a contribution to theoretical knowledge. This is so even though the inquiry be pursued on a single institutional level. The investigation should produce a design that can be replicated and which can, therefore, be broadened to an inter-institutional inquiry.

Institutional research, therefore, must follow the known traditional steps. As a background to any study, the scientific literature must be evaluated in order to find a rationale for the project. Hypotheses have to be carefully evolved. Strict sampling procedures must be employed, relevant variables must be designated, and a selection of proper statistical measures have to be provided — these to determine the validity of the hypotheses being tested. Hence, the outcomes will be based on more than descriptive data alone. The statistical inquiry of institutional research, as is characteristic of any scientific investigation, should be expected to yield a search for principles with some degree of generality even at the single institutional level. [1]*

Interdisciplinary Investigation

Based upon these canons, institutional research will be distinguished from the investigation of a single scholar or discipline by the fact that it will be interdisciplinary. An institutional examination of student characteristics implies an investigation projected, for example, not only by those expert in the intellectual-academic characteristics of students but also by those concerned with the psychological and social interpretations of higher learning.[2]

Theoretical Contribution

Institutional research should be expected to provide data that has practical usefulness, but institutional research must not be confused with "action" research. Practical policy and theoretical knowledge may make use, for example, of the indexes of performances of students, but the primary purpose of the search should be to increase theoretical knowledge, if possible. The contribution to theoretical knowledge is the "main-line" investigation, with practical considerations being second. Both practical ends and theoretical inquiry will benefit by the fact that the basis of the search is institution-wide, that is, data are secured from all the colleges and divisions of the university. Thus, for example, through an objective study of student characteristics, all the divisions of the university become acquainted with the nature and implementation of university educational goals, college by college, and on a university-wide basis. From such an institutionally-based study, objective data become available not only for theoretical inquiry but also for discussion of policy making at various levels.

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* Footnotes will be found at the end of the article

Research versus Evaluation

The distinction between institutional research and evaluation must also be clarified. Evaluation lies along a fairly well defined continuum such as this: institutional (university) aims and purposes→ specific educational goals→ college curricular objectives, course content, and instructional methods→ testing the effectiveness of the content and the process for learners→ evaluation→ reappraisal on the policy-making level of the total situation. Institutional research on student characteristics will, in addition, consider the college or university goals and purposes in relation to the learner. Significant data for evaluation, reappraisal of the educational objectives, and curricular implementations will result. But the investigation on the nature of the students will continue as an independent, student-oriented investigation of the young learner in a complexus of different learning situations in a supposedly unitary (university) environment. To oversimplify, in institutional research covering the field of students' characteristics, the emphasis throughout will be primarily upon the learner — and a group of learners— who may constitute a sample of a population of learners. In such evaluation, the relationship may be between certain facets of the characteristics of a sample of learners and specific educational goals.

Automation in Institutional Research

For an assessment of the characteristics of students of an educational institution the size of DePaul University to be reasonably and quickly available, it became obvious that recourse would have to be made to automatic data processing. This precluded waiting on a projected five-year schedule of manually gathering and classifying data. Following this decision, two issues immediately emerged as vital: (a) how extensive a body of data was available in various divisions of the university and (b) how quickly could the data be gathered for processing.

Several guidelines, in contrast to the normal processing of cumulative day-to-day statistical information, immediately developed.

(1) Emphasis in data processing had to be concerned with developing the idea of unifying information (not centralizing). This was necessary so that the entire body of information would be available as a service to all offices and divisions of the university for continuing basic research projects.

(2) The processing of data must not involve surrender of control over such evidence but must provide a common source of information. This had the effect of eliminating repeated duplications from the separate offices which formerly had been gathering overlapping data.

(3) It must be emphasized, even at the risk of belaboring what is obvious, that electronic processing does not exist for the mere sake of gathering, counting, and summarizing. The effective way to collect data is to plan with a particular office ways of collecting needed information for the purposes of that office and to incorporate these ideas into the functions of automatic processing equipment and the institutional research goal.

(4) An office whose data are to be processed for the first time should be made acquainted with the machine installation. This must be done before a discussion of the information to be processed is undertaken for then requirements and limitations of the equipment are more likely to be understood and accepted.

(5) It is more important that those charged with data processing be inducted into the nature of educational goals and purposes than educators be acquainted with key punches and tabulators.

(6) Data gathering apart from a research design which tends to hypothesize in advance about the final result is a waste of energy and time. Data should not — indeed must not — be gathered merely because it might prove to be interesting.

(7) Tension may be expected between those who see data processing from the viewpoint of its machine processing and those concerned with the art of research design. Processors usually want extreme uniformity in classification and established categories for long periods of time, whereas researchers insist on flexibility. This is asked for primarily because the gathering of information in a dynamic institution will always be complicated by the diversity of the students, the faculty, and inherent institutional procedures traditionally emplaced from college to college.

(8) Energy must not be diverted, therefore, into fitting the problem to the machine. The problem and the steps necessary for its elaboration must have priority over machine solutions. The

"electronic brains" do not think; men do.

(9) The ideal should be, of course, to keep the machines in operation, but if there is no knowledge to be gained from data, the machines may have to be idle.

(10) Careful distinctions must be made between a mere gathering of facts and an attempt at drawing conclusions and between a gathering of facts and implying value-judgments which result in justifications.

At DePaul, several results accrued from these methods of proceeding. First, the separate offices, through the intermediary of data processing, became aware of the wealth of data available on students' characteristics throughout the university. Second, internally there developed some understanding of each office's needs and requirements. Finally, the institution was made aware of the fact that every office was well informed about current educational research on student characteristics. In truth, it found that these offices had gathered important data but were often so overwhelmed by day-to-day operations that the evaluation of material was by necessity left mouldering.

Benefits of Automation

Although this research design to ascertain student characteristics is on a three-year time table, automation has already yielded the following benefits for additional investigation into student characteristics:

(1) Refinement of hypotheses was possible because automation permitted increasing the number of subsets and enlarging the number of combinations of an increasing number of variables on an inter-college, intra-college, and university basis.

(2) New lines of inquiry could be undertaken immediately to amplify, refute, or extend tentative conclusions.

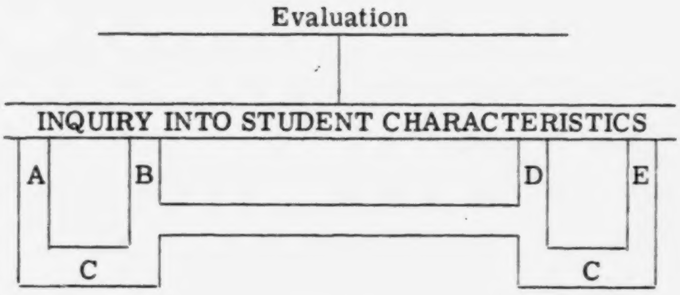
(3) A body of data could be isolated immediately for separate policy decisions without affecting the main line of inquiry.

(4) The offices could evaluate a body of data quickly for its relevance to the purposes for which they were gathered.

(5) Comparative data could affect practical procedures immediately.

(6) Institutional research by serendipity could assume various diagrammatic forms, such as the one at the top of the next column. The legend for this diagram is as follows:

A = University basis of granting honors.
B = High achievers by high schools.
C = Perception of university by high schools.
D = University basis of probation.
E = Low achievers by high schools.



Results

It was possible through the techniques in which automation was used to:

(1) set up a profile of student characteristics (rank in class, scores, and performance) for high-school counselors and college admissions officers; and

(2) reexamine university policies.

Several examples will amplify all six of the above-stated general benefits.

The university grants general admission. That is, it admits to the university and not to a given college, division, or department. The data gathered from the admissions blank, on one item alone — occupational preference — supported the conclusion that registrants had definite academic goals at the time of admission and matriculation. The student interpreted his admission and acted upon the assumption that his admission was differential. Data processing of information gained at the time of admission makes information available for counseling and educational advisement for this differential assessment of student goals.

Since the data seemed to indicate freshmen were entering with a resolved decision about majors, the research design additionally provided elaboration of an investigative instrument to determine what the student's perception of the university was, what the student's perception of himself was (through choice of self-descriptive adjectives), and what the congruence of his attitudes and values was with those of the college.

The important point is that immediate data processing indicated for the current enrollment of freshmen the possibility of a student body not oriented to the exploration of goals. Since occupational preferences usually imply certain value systems, other instruments were designed to establish non-intellective factors as predictors, as criteria, and as contingencies in selection and guidance.[3]

In any study of student characteristics, tuition costs are relevant. Since raising of tuition is almost an annual practice in colleges, electronic processing of socio-economic data yielded such practical information as the size of family from which the matriculant came, the position of the matriculant in the family, and the financial resources of the student.

In brief, automation is providing at a rapid pace data which are useful for day-to-day decisions, for evaluating academic practices, and for refining the overall research into student characteristics that will advance or retard future educational goals and curricular implementations and will describe adequately the characteristics of learners in a university environment.

FOOTNOTES

1. Walker, Helen M., and Lev, Joseph. Statistical Inference (New York: Holt, Rinehart and Winston, 1953), p. 14.

2. Sanford, Nevitt (Editor). The American College (New York: John Wiley and Sons, Inc., 1962), pp. 5-9.

3. Fishman, J. A. "The Use of Quantitative Techniques to Predict College Success," Admissions Information, I (1957), pp. 49-61.

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INSTITUTIONAL RESEARCH AT THE UNIVERSITY OF PUERTO RICO

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THE UNIVERSITY of Puerto Rico, which is a State Land-Grant Institution, consists of three main campuses located at Rio Piedras, San Juan, and Mayaguez, Puerto Rico. It also has extramural centers in other cities of the island and is about to establish junior colleges in regions where these are most needed. The Agricultural Experiment Station and the Agricultural Extension Service are part of the University, and their functions and services cover the whole island. The University of Puerto Rico is accredited by and has been a member of the Middle States Association of Colleges and Secondary Schools since 1946.

The University ranks eighteenth among the top 50 institutions of the United States according to total enrollment with 21,262 students enrolled the first semester of 1961-62. The University has grown very rapidly; its beginning as a Teachers' Training School was in 1900, but it really was founded by the law enacted on March 12, 1903. It has changed from its original purpose of teacher training to offer a variety of programs of a much broader scope. Enrollment in 1903 was 154; the number of faculty members has increased from approximately 100 in 1903 to 1,664 in 1961. The University of Puerto Rico has grown not only in its student body, number of faculty members, and programs offered, but also it has expanded physically and continues to improve professionally.

This rapid growth of the institution led the administrative officers to realize the need of statistical studies. The office of the Registrar was the first to start such procedures, but it was on a small scale, dealing particularly with enrollment figures, space utilization, and later on, with data on academic personnel. Some work was also done in regard to entrance examinations and admission requirements.

In 1944, the University of Puerto Rico signed a contract with the International Business Machines Corporation and from that date on, the University Tabulating Division has been renting late model machines. This has given a tremendous impulse to the furtherance of institutional research.

Enrollment figures would be impossible to manage were it not done mechanically. Information obtained from the student on his registration cards is processed in the University Tabulating Division and used in many ways, such as distinguishing regular students from those who do not carry a full-program and preparing enrollment distributions by faculty, sex, and year of classification. The number of courses offered by faculty and department can be determined as well as the number of students per section in each course, student credit hours, faculty teaching load, degrees and certificates conferred, retention rates, etc.

In 1949, the Research Division was created under the supervision of the Registrar, with a staff consisting of its director, one research assistant, two clerks, and 10 IBM operators and supervisors. In 1955, with the establishment of the University Planning Office within the Office of the Chancellor, research was centralized and controlled. The continuous growth of the University and the increasing complexity of its functions brought about the creation of the Office of the Dean of Studies, and the staff of the University Planning Office was separated into those working on academic planning and those dealing with physical planning. Thus, institutional research came to be part of the Office of the Dean of Studies, absorbing academic planning which involves analyses of use of academic space, enrollment projections, and many other statistical projects.

Currently, institutional research at the University of Puerto Rico is centralized in the Office of the Dean of Studies under a research officer whose staff consists of two research assistants and one secretary. Data are collected from the Division of Statistics of the Registrar's Office, from the Office of Academic Personnel, the Office of the Budget, the Offices of the Deans of the various colleges and schools, the Office of the Dean of Students, the Division of Finance, the Division of Extension Programs, and from other offices. Statistical tables and studies are made based on these data which cover all the branches of the University.

Questionnaires from the United States Office of Health, Education, and Welfare, the National Education Association, the National Council on Education, and from institutions of higher learning are answered in this office.

The University of Puerto Rico, being a State institution, depends mainly on legislative assignments for its support and growth. One of the main objectives of the office doing institutional research is to prepare statistical tables and studies to be used by the Chancellor as a basis for the budgetary propositions submitted yearly for consideration by the Legislature.

Recently, a special study on faculty salaries was made. Questionnaires were prepared and sent to 50 universities and land-grant colleges which were considered similar to the University of Puerto Rico. Replies were received from almost all of these institutions although only 46 were included in the study— a few were returned too late to be considered. The purpose in this study was to compare the salaries paid to the faculty members of the University of Puerto Rico with those of the 46 similar institutions selected. This report is confidential, but it has been distributed to the Chancellor, the Deans, and other administrative personnel of the University of Puerto Rico, for their criticism and recommendations. So far, the responses received are enthusiastic, and it is hoped that this study will be of value to the administration.

Data from graduate schools was used separately from that for the undergraduate level. The comparisons and conclusions attained are considered to be more reliable on the latter level because this sample was larger and more representative than the sample on the graduate level. Mean salaries were used as the basis rather than medians – few institutions indicated their median salaries. Following a comparison of the mean salaries used in this study with the medians published by the National Education Association in February 1962, on a study of faculty salaries of institutions of higher learning in the United States, it was concluded that there is no significant difference between the basis of this study and that of NEA.

With the data obtained from these institutions it was possible to make tables and graphs showing comparisons of the mean salaries of full-time faculty members by rank, and it was possible to reach various conclusions. Names of institutions were coded because of the confidential nature of the study.

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A NEW RE-ACCREDITATION PATTERN BASED ON INSTITUTIONAL RESEARCH: THE SELF-STUDY AT FORDHAM UNIVERSITY

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THE RE-ACCREDITATION pattern employed by the various regional accrediting agencies has typically involved a very broad but rather shallow institutional self-study to compile answers to an extensive questionnaire supplied by the agency, an inspectional visit to verify the response to the questionnaire items, and preparation by the visitors of a report on strengths and weaknesses of the institution.

Wide-spread criticism of this typical pattern has concentrated on the "busy-work" nature of the self-study questionnaire items, the strong temptation to camouflage institutional weaknesses rather than to delve into their causes, the failure of the reports of many visiting committees to do more than to underscore strengths or weaknesses which were already obvious in the data supplied to them, the arbitrariness of many of the visiting inspectors, and above all the general futility of the pattern as a stimulus to major institutional improvement.

In an effort to evolve re-accreditation patterns with more positive values, the Commission on Institutions of Higher Education of the Middle States Association of Colleges and Secondary Schools authorized several experiments in institutions of different sizes and types, each designed to try out the feasibility of a particular new pattern proposed for future re-accreditations.

Procedure Pattern

The pattern being tried at Fordham University, as a representative of the "large and complex" type of institution, involves study in depth of five large areas selected by the administration of the University itself as involving serious problems on which the advice of outstanding off-campus consultants might be found useful. The five "problem areas" thus selected were institutional objectives, university organization, faculty, student personnel, and graduate programs.

With a minimal central project coordination staff, consisting only of a full-time Executive Director (who bears the additional title of Assistant to the Academic Vice-President) and one secretary, emphasis has been placed on the work of a central Advisory Committee and of 12 study committees. The Advisory Committee consists of 27 members chosen from the university administration and all eight of its degree-granting units, on five different campuses, and includes scholars currently active as teachers or researchers in 14 different disciplines.

The 12 study committees, ranging in size from six to 13 members each, have a total membership of 102 persons, including a small number of individuals serving on more than one committee. Their areas of study include 1) the functions and responsibilities of the faculty; 2) faculty recruitment, selection and orientation; 3) faculty-University relationships; 4) improvement of communication and mutual understanding; 5) off-campus units of the University; 6) academic re-organization; 7) special academic programs; 8) adequacy of resources for graduate study; 9) material provisions for instruction; 10) residence facilities; 11) non-academic services; and 12) calendar revision.

One notes that none of the study committees are working in the area of objectives. This is because the determination of the objectives of the University was given the fullest time priority, with the Self-Study Advisory Committee itself and the University Academic Advisory Council devoting a series of meetings to formulation of a "Statement of Objectives." This topic is treated as a separate section of this article.

Since the beginning of the Self-Study in June, 1960, the Executive Director has conducted institutional research in such more or less routine areas as faculty load, class size, space utilization, and evaluation of the catalog series. Of greater importance, however, has been the coordination of the work of the study committees and the stimulation and facilitation of research by University faculty and staff members in such fields as student and faculty images of the University, comparison of senior characteristics with the nation-wide findings of the National Opinion Research Center in its study of the career aspirations of college seniors, student retention, and prediction of academic success.

Several of the study committees also have conducted research studies of a questionnaire type. One has done a good deal of primary historical research on the origins of one of the University's units.

Submission of Study Results

The report of each study committee, as it completes either its total assignment or a significant unit thereof, is submitted to the Advisory Committee for extended discussion, along with written comment by the Executive Director. By prior agreement, the study committee reports also are submitted without alteration to the University administration, so that recommendations may be implemented, rejected, or reserved for later submission to the consultants supplied by the Middle States Association.

Regular periodic re-inspections of certain professional units by five specialized accrediting agencies (in the fields of business, chemistry, law, pharmacy, and social service) were held jointly in February 1962 with two Middle States representatives serving as General Chairman and as Vice-Chairman, and the Executive Director of the Self-Study serving as coordinator. This phase of the pattern was also experimental in that the two Middle States representatives conducted no inspections but were responsible for interpretation of the University as a whole to the representatives of the specialized agencies.

The data collected, and the discussions held, up to May 1962 indicate major policy questions on which the University desires outside consultation, in the areas of University organization, determination of the enrollment to be accommodated in future years, and delimitation of the areas in which Fordham University should maintain programs at the master's and/or the doctoral level. Tentative solutions for these policy questions will be prepared by the Self-Study Office and the University administration, and will be submitted with the necessary background papers in February 1963 to a committee of ten consultants selected mutually by the University and the Middle States Association secretariat as being outstandingly competent in matters relating to the areas which the three major policy questions involve. Chairman of the Committee will be Dr. F. Taylor Jones, Executive Secretary of the Middle States Association's Commission on Institutions of Higher Education. After visiting the University and conferring with members of the staff, the consultants will prepare a report to the University which will embody the impressions of their visit and their recommendations to the administration on the specific problems presented to them.

The value to Fordham University itself, with the new Self-Study pattern only two-thirds completed, is already recognized as being much greater than would be that of the typical re-accreditation self-study procedure. The eventual action of the Middle States Commission with regard to changes in the normally required re-accreditation pattern cannot of course be predicted this soon, but the Fordham University experiment is expected to influence at least to some extent the future pattern of re-accreditation procedures.

Faculty Opinion in the Development of a Statement of Objectives

Probably no policy statement issued by any college or university is of greater importance to its faculty and administration– and, in some unfortunate cases, more ignored by both – than is the institution's official Statement of Objectives. If the statement is to be more than verbiage, the faculty must feel that it is their guide to action, a part of their professional life.

Only very broad faculty participation in the drafting of objectives can assure the degree of faculty understanding of institutional objectives, and of integration with them, which will make the objectives a vital force in the operation of the institution. Broad faculty participation has been found to achieve, especially in large and complex institutions, because of mechanical problems in the analysis of faculty opinions and of the synthesis of a document which will express at least the central tendencies of the opinions.

This section of this paper describes a process recently employed at Fordham University to canvas faculty opinion as to the validity and acceptability of a proposed Statement of Objectives, to secure detailed comments and suggestions as to the use or expression of each particular concept included in the Statement, and to determine what changes suggested by individual faculty members were sufficiently close to the central opinion of the faculty as to warrant incorporation into the document.

Inadequacy of Previous Statements of Objectives

The history of Fordham University revealed a series of statements, none intended to be complete in themselves, which over a period of 125 years had attempted to describe Fordham's objectives. Some of these were historical in approach, some philosophical, and some curricular, yet all tended to share three common characteristics: Virtually every one was 1) written by an individual, 2) authorized by some official with the rank of Dean upward, and 3) ignored by the faculty. Up to 1960 there was no official University-wide Statement of Objectives and no general policy on the publication of University objectives in the catalogs of the individual schools and colleges. Some schools and colleges published a statement, others did not, the published statements were in some cases not even consistent with each other. During 1958-1959 and the summer of 1959 a committee of Fordham College faculty members prepared a petition to Phi Beta Kappa for the chartering of a Fordham College chapter of that

Society.* This petition contained a statement of the general objectives of the University, as developed by the committee, but the statement was insufficiently comprehensive to include in its scope the activities of the University's various professional schools.

Lack of an adequate Statement of Objectives was one of the five "problem areas" chosen by the Fordham University administration for study in depth as part of the three-year experiment outlined in the first part of this article. The Self-Study Advisory Committee of 27 members assigned high time priority to the study of objectives. After two meetings devoted largely to the study of the University objectives proposed by the Phi Beta Kappa Committee of 1959, the Advisory Committee rejected them as incomplete because "All Schools of the University were not considered when these Objectives were written....."

Preliminary Statements of Objectives

At this time the Advisory Committee agreed that in any Statement of the Objectives of Fordham University the following concepts must be included: 1) opportunity for students to share in the common human patrimony of letters and science; 2) opportunity for students to acquire and develop the disciplines and modern techniques of the various arts, sciences and professions; 3) integration of religious and secular knowledge and wisdom; 4)liberal arts tradition; 5) advancement of human knowledge by research; and 6) obligation to community (described by some as "Christian maturity").

A "Preliminary Statement on Objectives," based on these factors, was prepared by the Executive Director of the Self-Study, reviewed by the Academic Vice-President, and presented for discussion at a meeting of the University Academic Advisory Council in November 1960 and at a later meeting of the Self-Study Advisory Committee.

Points which particularly aroused discussion at the latter meetings were 1) the relationship of Fordham to the New York metropolitan area, 2) the significance for University objectives of the fact that Fordham is a Catholic and Jesuit University, 3) whether or not specific reference should be made to the University's policies concerning non-Catholic students, and 4) whether or not there should be specific mention of Fordham's "membership in the fraternity of American Universities," which had been emphasized in the Phi Beta Kappa Report but omitted in the "Preliminary Statement on Objectives."

These discussions, and the apparent concensus of the Advisory Committee, were used as the basis of a "Tentative Statement on the Objectives of Fordham University" which was distributed in January 1961 to the 354 full-time members of the staff and faculties of Fordham University who held faculty rank or occupied administrative positions of an academic or quasi-academic nature. With each copy of the "Tentative Statement" (which had been mimeographed in a format in which individual concepts were numbered serially in order to facilitate reference to concepts by number) was enclosed a letter from the Executive Director of the Self-Study explaining briefly the background of the "Tentative Statement" and inviting comments on it; and an 8 1/2 X 13" mimeographed form which the respondents could use to record their opinions.

Faculty Response to the Preliminary Statement

Within approximately two months 198 responses had been received, a return of about 56 percent. The importance of the matter in the minds of members of the faculties is indicated by the attainment of this response without any pressure whatsoever on faculty members to reply. Use of follow-up devices of all sorts was carefully avoided in order to ascertain what percentage of returns could be secured without them, and in order to avoid weakening the consensus by including replies from persons not really interested in the matter.

The distribution of the 198 responses according to the general nature of each, and the unit of the University with which the respondent is affiliated, are shown in the following Table. There were 157 responses generally favorable to adoption of the "Statement" and 24 expressly negative. An additional 17 were mostly negative in their responses to individual concepts.

It is interesting to note in the Table that University-level administrators and members of the Arts and Sciences faculties[1] were very similar in their percentage of generally "favorable" and generally "unfavorable" responses and were more critical of the "Statement" than were any other groups with the exception of the Education faculty. The Education faculty not only had the second highest percentage of response but also the highest percentage of "unfavorable" responses. The two lowest percentages of total response were from the highly professionalized faculties of Law and of Social Service. Those responding from Social Service unanimously gave general approval while the "cagier" lawyers were relatively generous in specific suggestions but apparently reluctant either to approve or disapprove the "Statement" as a whole.

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*Fordham College is a liberal arts college for men only, and was one of the original units of the University. The chapter was authorized in 1961, and a charter issued under the designation of "Tau of New York."

[1] Fordham College and the Graduate School of Arts and Sciences, which share one integrated Faculty.

DISTRIBUTION OF 198 RESPONSES RECEIVED TO "TENTATIVE STATEMENT ON THE OBJECTIVES OF FORDHAM UNIVERSITY" BY GENERAL NATURE OF RESPONSE AND BY UNIVERSITY UNIT FROM WHICH RECEIVED

General Nature of Response	Number of Responses, by University Unit*							
	Grad. Sch. Fordham College	School of Bus.	School of Educ.	Coll. of Pharmacy	School of Law	Sch. of Social Serv.	Administrators**	Total
Favorable, plus additional favorable comment but no specific suggestions	3	3	6	--	--	2	1	15
Favorable, with neither comment nor suggestions	29	20	8	3	2	3	6	71
Favorable, with suggestions	32	11	14	6	--	4	4	71
Unfavorable, with suggestions	12	1	6	--	--	--	2	21
Unfavorable, with no suggestions	1	--	2	--	--	--	--	3
Neither favorable nor unfavorable, but with suggestions	6	2	3	1	3	--	1	16
Neither favorable nor unfavorable, with no suggestions	1	--	--	--	--	--	--	1
TOTAL	84	37	39	10	5	9	14	198
Percentage of unit's full-time faculty represented in responses***	56.4	68.5	81.3	90.0	35.7	45.0	--	55.9
Percentage of favorable responses	76.2	91.9	71.8	90.0	40.0	100.0	78.6	79.3
Percentage of unfavorable responses	15.5	2.7	20.5	--	--	--	14.3	12.1
Percentage of respondents offering one or more suggestions	59.5	37.8	59.0	70.0	60.0	44.4	50.0	54.5

* The College of Philosophy and Letters (an off-campus residential liberal arts unit), was not originally included in this particular Study. The Graduate School and Fordham College share one integrated faculty.

** University administrators not assigned to any specific School or College. Two administrators from the School of General Studies, which has no full-time faculty of its own, were included in this column.

***Items on this line are in some cases only approximately correct since some responses from Deans and Assistant Deans are included; the statistics of "full-time faculty members" used had not included administrators.

In all, over 300 specific suggestions for additions, deletions or changes in the "Statement" were made by the 108 respondents (out of the total of 198 respondents) who offered concrete suggestions. These were analyzed by the Self-Study Office and are reported in detail elsewhere.[2]

As illustrative of the suggestions offered by the faculty respondents to the 21 concepts included in the "Tentative Statement," an analysis of the faculty reaction to one concept, "As a member of the contemporary American university fraternity...," is presented.

Two respondents thought this concept should be deleted as having "no real meaning," and two others thought it "superfluous." Another thought it unrelated to the concepts which immediately followed. One respondent thought that it was "too restrictive in that the University's actions seem to be limited to membership in a national professional group in the contemporary scene." One person suggested that it would be desirable to "rephrase or delete" the concept; three others who did not particularly object to the clause as a whole wanted to delete the word "contemporary" (One wrote "contemporary is otiose."). Several objected to the word "fraternity," with two suggesting instead the word "community" - one would write "scholarly community" instead of "university fraternity," and another suggested "scholarly community in search of truth." One respondent suggested that Fordham be described "as a member of the contemporary family of American universities" while another felt that the wording was "too heavy" and suggested that it would be well to "try" the phrase "a representative American university." On the basis of these expressions of faculty opinion, the concept was omitted from the final draft.

The "Tentative Statement" was then re-submitted with a report on the expression of faculty opinion to the Self-Study Advisory Committee, which after discussion and revision recommended its official adoption by the President and the Board of Trustees of the University.

The new "Objectives of Fordham University," as the final document was titled, was officially approved and promulgated in August 1961, approximately one year after the beginning of the Advisory Committee discussions of its content. It has met remarkable acceptance, even by individuals who had strenuously opposed certain of its provisions. This undoubtedly is because the faculty members, having participated in the formulation of the document, find identification relatively easy.

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[2] Readers are invited to write for a mimeographed full report of the study, including detailed analysis of the comments of faculty members, to the author at the Self-Study Office, Fordham University, New York 58, New York.

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THE UNIVERSITY OF NEW HAMPSHIRE SELF STUDY

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THE UNIVERSITY of New Hampshire self study, 1959-1960, was initiated as a result of faculty prodding and was conducted by a team of six professors aided by off-campus consultants. This study was limited to an analysis of what might roughly be termed the academic or classroom factor of the University's life. It focussed attention on the numbers and kinds of courses taught and the administrative arrangements for teaching, faculty workloads, and time and space utilization.

Background of the Study

The limits of the study were imposed in part by the faculty's interest in what should be studied. The two faculty bodies suggesting the study, the Faculty Council and the Curriculum Committee of the University Senate, were primarily interested in what might happen to the teacher at the University of New Hampshire when the surge of rapidly increasing enrollments strikes the campus in the mid-1960's. They were disturbed by the enrollments being projected for the University by administrators who had studied the admission problem at various times during the previous five years. As a publicly-supported institution, the University of New Hampshire remains obliged to admit all qualified in-state applicants; it could not, therefore, readily impose a ceiling on enrollment. The faculty sponsors were also disturbed by nationwide reports of an incipient shortage of qualified faculty. They sought a discussion of how the University could maintain or enhance the quality of teaching in the face of drastically altered circumstances.

Organization and Support of the Study

The sponsors suggested to President Eldon L. Johnson that the study be conducted by a faculty team which would be relieved of all other assignments for the duration of the study. This faculty team would collect data, but outside experts would be called in to evaluate the data and make recommendations. The assumption seemed to be that the sensitive nature of the study precluded home-made policy recommendations. The outsiders' objectivity combined with their expertise would presumably engender more support and respect for the completed study.

President Johnson enthusiastically approved the general concept of the study. He won the support of the Trustees for what ultimately became an $18, 000 operation supported by the income from the Spaulding Fund which had been given to the University some years earlier for improvement of undergraduate education. The President provided for a year's study by six faculty members whom he would select, three of whom would be on formal half-time assignment to the study; the three others were to serve as advisors and critics without allotment of time.

President Johnson also endorsed liberal underwriting of the cost of consultants and any other expenses, including travel, that the group (to be known as the Committee on Academic Programs and Teaching Methods) needed to accomplish the task. The service of Miss Doris Beane, the Assistant for Institutional Studies in the Office of Student Personnel, was made available to the group in its data collection. The President made no effort to define the scope of the Committee's study. However, he transmitted the letter of the sponsoring groups to the six-man Committee as a general frame of reference.

Qualifications of and Division of Labor Within the Research Committee

The six members were selected as representatives of broad disciplinary areas: social sciences, humanities, engineering, physical sciences, life sciences, and agriculture. President Johnson's appointees were men who had either evinced strong interests in self study or had had experience in conducting such studies. The Chairman of the Committee was also the Chairman of one of the two sponsoring groups. Two others had been participants in a major curriculum study in the College of Agriculture, and a fourth had had experience in curricular studies in the College of Technology.

The Committee spent the major part of its first eight weeks defining its problem and determining divisions of labor. The major areas of study were divided among the members, including the advisory members who volunteered for a full share of the task. One member took primary responsibility for research on time-space utilization; another chose faculty workloads; the others divided the task of studying curricular problems and administrative arrangements for instruction. At this point, the first consultant was invited to advise on methodology. Dr. John Stecklein, Director of the Bureau of Institutional Research, University of Minnesota, spent nearly two days in almost continuous discussion with the group on methods which would be both manageable and effective in view of the group's amateur status, its rather rigidly-prescribed time limits, and the scattered or unusable nature of existing data.

Time-Space Utilization

The time-space utilization study followed operational procedures listed in the Manual for Studies of Space Utilization in Colleges and Universities by J. D. Russell and J. I. Doi (American Association of Collegiate Registrars and Admissions Officers, 1957), and those used by the Bureau of Institutional Research at the University of Minnesota. The format for ultimate presentation of the material in this section of the report was suggested by the "Utilization of Instructional Space in the State University System of Florida, Fall, 1958" Board of Control, Tallahassee.

In pursuing the time-space study, the Committee member in charge actually measured existing classroom and laboratory space with a tape measure to obtain as accurate data as possible. Class scheduling information was readily available from the administrative offices. The data were then placed on punched cards and suitably coded. The resulting report compared University of New Hampshire use of instructional space and scheduling of classes with that of other institutions which had utilized similar approaches, e. g., the State University of Florida and the University of Nevada. This proved a most valuable guage of institutional efficiency.

Faculty Workload

The main objective of the faculty workload study was to ascertain 1) whether average teaching loads could be increased, perhaps by providing instructors with more sub-professional assistance, and 2) whether non-academic duties take up too much time. The study depended largely upon a fairly detailed questionnaire which was submitted to faculty members who were present on the campus at the time and who had had more than a year of service. Questionnaires were submitted to 230 faculty members; 213 usable returns were obtained. The questionnaires were supplemented by use of data which the Administration had accumulated through annual instructors' reports and through interviews.

Inevitably, the Committee felt that much of the information resulting from the questionnaires was based not upon fact but upon the faculty's estimation of fact. Because of this, the resulting report warned that the compilation and tabulation of the data should be viewed as a beginning rather than as an end to the study of faculty activities. The Committee used the data to propose some ways in which faculty time could be applied more effectively and to suggest a more accurate and equitable method of evaluating faculty loads, but it also expressed its hope that the colleges and departments would use the data in conducting their own self-evaluations of faculty time.

Curriculum and Administrative Arrangements for Teaching

The study of the curriculum and administrative arrangements for teaching involved a number of devices. Moreover, in attempting to assay the amount of unnecessary duplication and proliferation of courses, the quality of existing programs, the role of large versus small classes, teaching machines, television, library facilities, year-round operations, et al., the Committee immediately found itself in an interesting philosophical quandry.

If the Committee was to collect data on these matters and prescribe alternative courses for the future, there seemed to be a need for a definition of the University's underlying objectives. The question proved sufficiently fundamental to compel the entire group to devote at least a month to an effort to define the objectives and to relate programs to these objectives. The multiple interests of a Land Grant University made the problem tortuous, yet the consensus which the Committee reached on this matter, following considerable discussion with faculty and administrators, went a long way in providing order and cohesion to the subsequent research and evaluation. Immediately, the consensus paved the way toward the determination of guide lines for maintaining the University's objectives and programs in a sound relationship.

The methods utilized in determining the state of the curriculum included analyses of time and room schedules, instructors' grade sheets, and other data on file. Information was gathered for the preceding academic year and an earlier reference year. This material was coded and punched on cards.

Much of the qualitative assessment of the curriculum, as well as reactions to varying administrative arrangements for teaching, was based on interviews and questionnaires. All the Committee members conducted depth interviews of department chairmen and of a random sample of different faculty ranks within departments. Over 100 faculty were interviewed. Questionnaires were sent to a random sample of 10 percent of the student body to ascertain views on strengths and weaknesses in existing programs. The Committee was aided in the evaluation of these questionnaires by selected student leaders.

Evaluation of Data

The Committee departed from its original mandate in one significant respect. Following the collection of data, it decided that it should assume the primary responsibility for determining what the data meant for the University's academic future. Originally, emphasis had been placed on the importance of the outside experts' objectivity in making recommendations. This, however, had to be weighed against the Committee's intimate acquaintance with the special nature of the University of New Hampshire. The Committee's decision to offer its own recommendations was reached after a unanimous endorsement of this procedure by the consultants brought to the campus.

Outside Analysts

The task of evaluation involved utilization of several highly regarded analysts brought to campus for a day or two toward the end of the year. These analysts were selected for their obvious interest in the kind of problems with which the Committee was wrestling. They included Dr. Earl J. McGrath, former Commissioner of Education of the United States Government, who was and is involved in research and writing on higher education at Teachers College, Columbia University; Dr. Philip Coombs, then Secretary of the Fund for the Advancement of Education; Dr. C. R. Carpenter, Director of Institutional Research, Pennsylvania State University; and Dr. Paul L. Dressel, Director of Institutional Research, Michigan State University. A "windfall" consultant, who had been brought to the University for other purposes, was Dr. W. H. Cowley, Professor of Higher Education, Stanford University.

The analysts were used in two ways. They were asked the meaning of the data, and they were interrogated about their experiences and opinions about self studies and the future of higher education generally. The Committee agreed that the week or so given to these concentrated sessions with well-informed visitors was invaluable. The analysts provided assurance to the Committee regarding the respectability of its efforts, well-reasoned direction-markers for reaching policy recommendations, and authoritative support for the over-all study.

Related Conferences at Other Institutions

In addition to analysts' visits, Committee members travelled to nearby institutions to interview faculty and administration regarding educational policies which attracted interest. Illustrative of such visits were those to Dartmouth College to study the three-quarter calendar; to Colgate University to observe the core course curriculum; and to the Connecticut Valley of Massachusetts, to discuss the efforts of the University of Massachusetts, Amherst, Mount Holyoke, and Smith Colleges at establishing a merged venture in higher education.

The Results

The resultant study, complete with charts, graphs, and appendices, encompassed 117 printed pages (double column, 8-1/2 × 11 inches). It included 53 recommendations for change in University policy, ranging from some rather minor matters, such as altering the physical education requirements and changing the nature of the Library Committee, to far-reaching innovations, including the prescription of a University-wide requirement of a four-year independent reading program and a recommendation to departments to prepare a master plan for all aspects of their development for the next decade. The report, entitled "The University of New Hampshire and the Future," was formally presented to the faculty in January, 1961, at an assembly convened by President Johnson for the purpose of giving the Committee members a chance to express their views about the study and to entertain questions about it.

The Committee's assignment had been to gather data and to offer a springboard for discussion, leading to action. Although implementation depended on faculty and administrative initiative, the Committee sought to pinpoint responsibility for action along with its recommendations wherever it seemed relevant to do so. In the months following circulation of the study, Committee members found themselves involved in continuing consultation with administrative and faculty groups regarding implementation of the recommendations. This experience led Committee members to the conclusion that self studies might well give more attention to the problem of what happens after the study is published.

Conclusions

If any general conclusion can be reached about the University of New Hampshire self study it is that a serious and methodical ad hoc faculty venture given both financial and moral support by the administration can serve as an invaluable springboard toward a type of internal ferment conducive to general planning of an institution's future. Once data are brought to light about its dark corners, an institution will not readily be able to settle back into a complacent status quo. A valuable by-product of the University of New Hampshire study has been a recognition of the importance of continuous, soundly-conceived institutional research.

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AN APPROACH TO INSTITUTIONAL COST ANALYSIS*

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LATE IN THE fall of 1960, Wayne State University began a campus-wide cost study. This was not the University's first attempt to study its costs of operation. Indeed, every organization makes a kind of cost study, even if somewhat unsophisticated, each time it prepares a budget or issues a financial report. Wayne State University departments and colleges had for some time been making informal probes of their expenditures. Even a couple of all-University attempts had been made to study costs before 1960. Few persons, however, placed much confidence in the results of these early cost studies, and the results were seldom, if ever, cited in support of a budget request or in explaining costs of University operation.

Different circumstances surrounded the 1960 study. For one thing, only a few months before, the State Legislature had enacted into law a requirement that all public universities in Michigan must analyze and report their operating costs each year by student level. Various interpretations have been attached to the term "student level," but it is now quite generally accepted to mean the following five divisions of students: freshman and sophomore, junior and senior, masters, doctors, and graduate-professional students.

In retrospect, this enactment produced two very real benefits for Wayne:

1. It caused the University to devote as many resources as could be spared, both personnel and money, to undertake the necessary cost study.
2. Because the study suggested a level of complexity that cost studies had not previously demanded at Wayne, the assistance of the University's Computing and Data Processing Center was enlisted.

Because adequate resources were available and because extensive use was made of Computer Center facilities, the current cost study has achieved a measure of success which Wayne's earlier cost studies did not enjoy. And because few compromises were made in favor of cheaper or less detailed procedures, a level of sophistication and accuracy has been attained in this study which the cost studies of other institutions seldom attain.

Planning the Study

The first step in planning the study was the creation of an advisory committee. Some 10 persons associated with fiscal and statistical offices in the University constituted the committee, which met weekly for several months to establish the broad study framework. It was recognized at the outset that this study would succeed only if active involvement of many persons in the University was obtained, for an all-inclusive study of costs was bound to affect virtually the entire University in one way or another. Success in obtaining University acceptance of the study was due in large measure to the rather lengthy time taken to discuss the study with many individuals and to adjust it as much as possible, in light of the concerns of these persons. A description follows later in this report of how certain specialized information was collected from certain instructional units (over and beyond the common data collected from all) and how this special information was processed according to the wishes of the units requesting its collection.

The advisory committee agreed that the initial focus of the study should be on the direct costs of instruction, specifically the salaries of teaching personnel and related expenses of the instructional units of the University. There were three reasons for this. First, more than half of Wayne's costs are under the budget classification of "Instruction and Departmental Research," which represents the salaries, supplies, and equipment costs of schools and colleges of the University. Second, the actual costs of teaching courses, i. e., the salaries paid to faculty, constitute the principal expense in this classification. Third, since it is possible to identify the levels of students in the courses, this seemed to be both a convenient and a logical starting point for assigning costs back to student levels.

After careful study of alternate ways of apportioning faculty salaries back to the courses taught, a procedure was adopted which made each member of the academic staff responsible for dividing his University service between teaching and other kinds of service such as research and public service. Some universities use arbitrary formulas for dividing the service of faculty among the different functions. But all studies must somehow make an allocation of faculty service, which is really an allocation of the time spent in different service areas, for this is widely accepted as the first step in apportioning faculty salaries to different courses and then to different levels of students in the courses.

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*Based upon an address delivered at the Seventh College and University Machine Records Conference held at Wayne State University, Detroit, Michigan, May 1, 1962.

In reality, there are three basic steps in this important phase of virtually all cost studies: 1) determining faculty time or energy spent for different services; 2) converting each time or energy element to a percent in order to reflect the portion given to each course and to each other service; 3) multiplying the percent of time given to each course by the appropriate individual's salary in order to assign a dollar value to each course.

The decision at Wayne to require the faculty member's judgment of the division of his time is the basic distinguishing characteristic of the instructional cost phase of its institutional cost study. There was some apprehension, of course, that asking faculty members to divide their University service into components might not meet with the approval of certain faculty. The reporting of suspiciously high percentages of time to "filling out questionnaires" by a couple of faculty members suggests that the concerns were not unfounded.

Faculty members, it was assumed, would become increasingly accurate in their judgments of percent of time spent in different service areas as they make judgments over several terms. Limited evidence suggests that this assumption was sound.

Once the decision was made to rely on faculty judgment in dividing time, development of a form, initiation of data collection, and planning for the analysis of data could begin. It was at this point that Dr. Walter Hoffman, director of Wayne's Computing Center, was first contacted to explore how the Computing Center might aid in the project. Following this meeting with Dr. Hoffman, Mrs. Maggie Goodwin began the task of programming the study. This first program yielded some three and a half million figures spread over 3500 tab pages, all for one semester and for only one phase of the institutional cost study.

Collecting Information from Faculty

The form developed to collect information from faculty has now been used four times. Minor changes have been made since the first use, but the basic approach remains unchanged. The form provides for two kinds of information: 1) the percent of time the faculty member devotes to each of the classes he teaches; and 2) the percent of time he spends in other service, including administration, research, public service, etc.

Every academic person paid from State funds and assigned to an instructional unit (school or college) completes the form. This includes deans, graduate teaching assistants, and part-time faculty as well as the regular professorial and other instructional staff.

The percentages entered on each form must total 100. That is, a faculty member devoting 40 hours a week to University service is asked to consider the 40 hours as constituting 100 percent of his time. A faculty member who devotes 60 hours a week to University service must use 60 as his base, and for him 60 hours represents 100 percent of his time. One of the immediate effects of this decision is that it is possible to increase a percent in one category only if there is a counter-balancing decrease in another. If there is any tendency to overstate the percent of time devoted to one service, such as research, this can be done only if another percent, such as that reported for class instruction, is reduced. One faculty member reported that the only real problem he faced in completing the form was keeping his total percent down to 100.

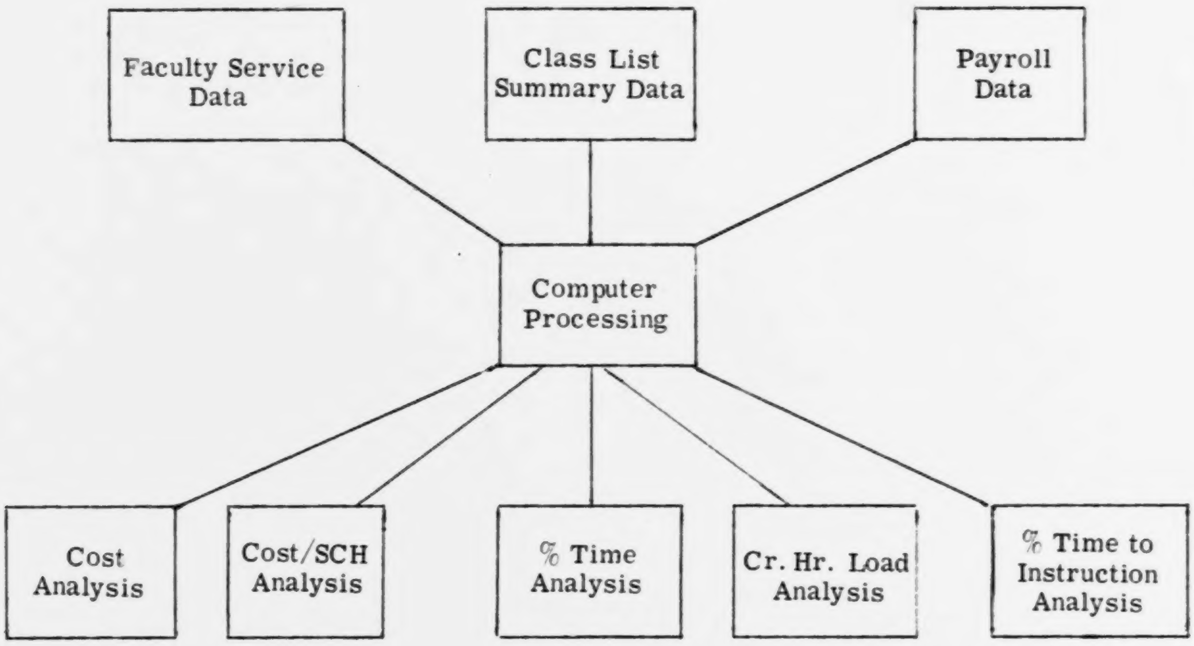
Rationale for Allocation of Instructional Costs

The analysis of instructional costs proceeds as follows:

1. The percent of time an individual reported for a certain class section is multiplied by the salary he received for the semester. The resulting dollar amount is then assigned to that section. If two or more faculty members participate in the instruction of a class, each reports a percent of time for it. The dollar amount assigned to the section is then the sum of the appropriate dollar amounts from the salary of each faculty member participating in the teaching of the section.

2. Once the dollar value for the section is determined, a reallocation of this amount to student levels has to be made. This is done on the basis of the proportionate student credit hours in the class at each of the student levels cited previously. For example, assuming that a faculty member reports 10 percent of his time for a certain class and that his salary is $5000 for the semester, 10 percent of $5000, or $500, is the amount chargeable to the class. If there are 25 students enrolled, each registered for four credit hours, then the class has 100 student credit hours (25 × 4). If 15 of the students (60 student credit hours) are freshmen or sophomores, then 60/100 of $500, or $300, is charged to the freshman-sophomore level. If the other 10 students are juniors and seniors (40 student credit hours), then 40/100 of $500, or $200, is assigned to the junior-senior level.

3. This basic calculation is repeated for every section reported on each of the faculty service forms; then the dollar values are totalled by student level for each department, for each college, and finally for the entire University. The total dollars so derived are divided by the student credit hour total at each level to yield a cost per student credit hour.



The task of making these thousands of calculations is left to the computer. The input information to the computer, based upon the enrollment and assignments at the end of the second week of classes, is as follows: 1) data from faculty service forms reflecting service to the University for the semester; 2) class list summary cards containing basic student credit hour data by level for all sections taught in the University; and 3) faculty payroll masters from which term salaries can be projected.

The diagram above shows the input and output for the instructional cost analysis.

Output—Cost Analysis

From this program certain costs are obtained based on salaries, fringe benefits, and salaries plus fringe benefits for each teaching classification by department, college, and for the University. To accomplish this, the salary of each faculty member is first assigned to the class sections taught and to other service areas, according to the percentages reported on the form. Teaching costs for each section are then distributed to student level on the basis of the student credit hour distribution, by level, in that section. These teaching costs by level and the other faculty service costs are then summed by teaching classification for each department, for each college, and ultimately for the whole University.

Output—Cost Per Student Credit Hour and Cost Per Student Registration Analysis

In this program, the teaching costs derived from the Cost Analysis are compared to the student credit hours produced by the respective department, college, and the University to yield costs per student credit hour by level. Two different sets of student credit hour figures are used. One is the total student credit hours from all sections reported by faculty. The other is the total of all student credit hours, even those produced by central University personnel and others not assigned to the instructional unit budget. The procedure is repeated for the cost per student registration analysis, where student registrations are defined as the number of students registered in the class sections.

Output—Percent of Time Analysis

This program yields a frequency distribution by faculty head count and by full-time equivalent, showing the number of faculty devoting certain percentages of time to instruction, to administration, to research, and to the other service areas shown on the form, for each teaching classification, by department, college, and for the University. Figures are reported for intervals of 10 percent (from 0% to 100%) but with zero percent and 100 percent shown independently. This is one of the extra kinds of information which the study yields. The output is not directly related to the cost study, but it is useful to different segments of the University in showing how the energies of faculty are distributed over the different areas of service.

Output—Credit Hour Load and Contact Hour Load Analysis

Frequent questions are asked about teaching loads in different departments and for the University as a whole. Measures of load which are typically requested are credit hour loads and contact hour loads. This program provides a frequency distribution of both credit hour and contact hour loads by teaching classification for each department, college, and for the University. Average teaching loads are also obtained.

Output—Percent of Time Assigned to Instructional Units

This is another special run not related directly to the cost data. Its basic purpose is to provide data for the State Budget Director on the number of full-time equivalent faculty, broken down by teaching classification and by the percent of time assigned to instructional units.

Some Fringe Benefits of the Cost Analysis

This study marked the beginning of a new era in institutional research for Wayne State University. In previous studies, sufficient personnel or time had not been available to utilize the data collected as fully as was desirable, and potentially useful studies had to be eliminated. A whole new dimension was added with this study. It was no longer a question of what had to be omitted. It was, rather, a series of continuing inquiries by our programmer as to what further studies might be desirable.

In the cost study, the immediate concern is simply a complete picture of the way costs should be assigned to specific student levels for the total University. But since the source data begin with classes and individual faculty members, it is possible to make intermediate summaries by department and college before striking the all-University figures. Some day the State Legislature may want costs broken down by department as well as by student level. In addition, this information can be helpful immediately for internal analysis, both by individual departments and by the central University administration. Therefore, all the programs are set up to yield analyses by department, wherever possible.

Frequent inquiries have also been made about differences between the teaching classifications, both in terms of costs and teaching loads. All analyses, where possible, are therefore made in terms of teaching classification.

Furthermore, each of the instructional units is offered the opportunity to collect and have analyzed information beyond that collected in common from all units. The College of Liberal Arts, for example, wanted data on total clock hours of service by faculty. (All units reported contact hours and credit hours of teaching, but only this unit wanted total clock hours as well.) A column titled "For College Use" was added to the form which the College of Liberal Arts used to report clock hours.

Later, the College of Education decided it would be helpful if the "service units" which that college uses to describe faculty service were analyzed. Faculty in that college used the column "For College Use" to report service units, and the Office for Institutional Research arranged for the appropriate analyses.

These "fringe benefits" resulting from the decision to enlist automatic data-processing equipment are emphasized because it seems advisable for each institution to explore such possibilities whenever a detailed study of costs is undertaken. Much of the data on teaching loads either must or can be easily collected at the same time. Not only is a great deal more information made available, but it is also felt that the results from Wayne State University's study are more valid because the greater interest of more people, faculty and administration alike, in the results tends to lead to greater care in completing forms and otherwise providing necessary information.

Allocation of Non-Instructional Costs

All this represents just one phase, albeit the largest phase, of a study of institutional costs. The present program does not yet include a procedure for allocating the costs of faculty service devoted to research, administration, public service, etc., over the student levels. Bases for such allocations are being developed, and when firm decisions are reached, the program will be modified to provide for these.

Neither does the program provide for the allocation of costs other than salaries of academic personnel over the five student levels. These include costs for supplies, equipment, maintaining the physical plant, and the operation of non-instructional units, all of which must ultimately be provided for in the construction of an all-inclusive cost "model." A rationale for the allocation of these costs to student levels is also being developed and will be incorporated in the program.

The Library

During the spring semester of 1962, and each of the past two terms, a sample week was selected as a basis for study of the library with the intent of projecting the week's costs to the full semester. During this sample week, each student taking out a book indicated what his class level was and for what course (hence for what college) he was intending to use the book. Each of the 10,000 or more "circulation slips" was then analyzed to determine what proportion of circulation use was assignable to each college and to each student level in each college. The proportionate use at each level in each college served as the basis for spreading the total circulation costs to these units and levels.

Reference costs for the library could also be identified separately. To assign these to college and level, information was collected during the sample week on the length of time it took to answer each question asked by each student, identified by level and by course (hence college) for which the question was asked. This system is complex and very time-consuming for it has not been possible, at the present time, to mechanize this phase of the study.

However, the need for information of this kind led to exploring again the use of "charge-a-plates" as student identification cards. This was not the first time the library and other units investigated the possibility of a charge-a-plate identification system. The decision has now been made to initiate a charge-a-plate system during the fall quarter, 1962 (Wayne moves from the semester to the quarter plan in the fall of 1962), thus making the library phase of the cost study as well as the analysis of such areas as the Division of Student Services much less challenging, both in cost and time.

To illustrate how far-out thinking on the potentials of the charge-a-plate system has progressed, the possibility of turnstiles in the library has been contemplated so that the student's identification number from his charge-a-plate could be recorded when he entered and left the library. The time each student spends in the library could be determined by matching input and output turnstile data, and the length of time that students from a given class level from a given college spend in the library could be determined. Since the time spent by students is assumed to bear some relationship to operation and maintenance costs in the library, a basis would be established for assigning library operation and maintenance costs to college and to student level.

Conclusions and Implications for Future Studies

The degree of detail presently being pursued is, of course, much more than is necessary on a continuing basis. However, such great detail in the study seems necessary at least once, although shorter and otherwise improved methods will be developed as the cost study is repeated in succeeding terms. It appears that any university that decides to commit its resources to a cost study must go through a tremendous amount of detailed study which can later be shortened in the light of experience. The important thing is to do it thoroughly the first time so that the proper decisions for adopting abbreviated procedures can be made.

One possible weakness of the cost analysis study is the premise that faculty members are able to make judgments as to how they spend their time. During the past academic year, however, all the Michigan public universities and colleges agreed to adopt, on an experimental basis, the basic procedure Wayne has been following, in order to comply with the legislative enactment cited earlier in this paper.

Clearly this procedure is not a panacea for the sometimes agonizing problem of necessary university costs, but a procedure has been developed which works for this institution and which has elements that may have applicability to other institutions. Even more than the immediate results obtained, there is a long-range benefit which results from the decision to plunge so completely into a study of this complexity. This is an awareness that many of the studies of faculty and students, heretofore rejected because they demanded so much personnel time and appeared to be just too involved and expensive, are really able to be attacked through the facilities of the Computing Center. Some giant strides forward in this area of institutional research, based upon the experience so far with Computing Center personnel and machines, are expected in the next few years.

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UNIT COSTS OF INSTRUCTION IN HIGHER EDUCATION*

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LARGE AMOUNTS of time and energy are being expended on many university campuses in America today in an effort to develop something called "unit costs." In this paper, some of the methodological issues underlying these efforts will be explored, and the methods being used in this area by one university will be described briefly.

It is customary and perfectly appropriate that anyone writing on this subject should first genuflect before that immense project known in the trade as the Cal-Big Ten study. The California and Western Conference Cost and Statistical Study[1] involved a tremendous investment in time and money in a pioneering effort to obtain comparable data from the participating institutions. The Study indicated that it was possible for a group of diverse educational institutions to cooperate in developing comparable cost data, and the participants have made use of the data for a variety of purposes. Unfortunately, the study was not continued, either individually or as a cooperative inter-institutional venture. Perhaps it came too early or the need for the data was not fully appreciated, for funds were not made available to permit their continued collection and processing. Why then is a resurgence of interest in studies of unit costs found even among many of those who did not participate in the earlier study?

The Purposes of Unit Cost Studies

At one level the reasons are obvious. Tremendous growth in higher educational facilities is inevitable in the next decade. It is understandable that legislators, alumni, trustees, and the public should ask what it will cost and hope to get the answer by multiplying the number of expected students by some cost-per-student figure. Administrators respond with magical formulae which attempt to allocate the joint costs of inseparable functions. These efforts do result in some figure which will satisfy the inquiring legislator or the man-on-the-street; beyond that they are virtually worthless.

Nevertheless, there is a pressing need for objective measures and standards in budgeting, planning, and day-to-day management. The sheer magnitude of these tasks, at least in large institutions, demands reliable cost information. Here the pressure is not from a tax-shy public or a legislature bent on trimming budgets, but from those who are facing the difficult decisions: faculty members serving on planning committees, budget officers, and other school administrators; technical staff in the state departments of finance or education; and a few legislators who have made education their special province. What is sought is a basis for control of the tremendously expensive growth that must take place; the goal is to achieve maximum results from limited financial resources.

To speak of control over higher education is to arouse fears, especially among the faculty. It must be emphasized that this discussion concerns only the development of tools of control, without specifying who is to use them. It matters not, for present purposes, whether control is exercised by committees of the faculty, deans, presidents or chancellors, or some agency of state government;[2] the problem rather is how to provide the "controller" with tools to make his control informed and effective. This requires mechanisms enabling the controller 1) to know when and where action is required, and 2) to know what action is appropriate. The first of these has been called "attention-directing" tools; the second, "problem-solving" tools.[3]

Attention-directing mechanisms are required because the controller is unable to have first-hand information concerning all the operations which he is required to control.[4] But directing attention to those areas where attention is needed is no simple task. Even the best methods devised by industry are far from perfect. One frequently finds that the mechanism serves to draw attention to inadequacies in the raw data or in the methods employed rather than to the realities of the situation. Another problem is that some standard must be established for purposes of comparison with the actual performance. This standard may be derived from data for the recent past (perhaps an average or a smoothed trend), or it may be based on the experience of other comparable operations; less often, the standard is "engineered," representing what ought to be. However, a standard cannot take account of all the factors that may be relevant in specific situations; in certain cases, a departure from the "standard" may be necessary for the efficient operation of the system.

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*Footnotes will be found at end of the article.

Some aspects of the operations of a college are similar to those of industrial enterprises, e. g., what is known generally as "Maintenance and Operation." In these areas, it is clear that unit costs will be useful in forming and applying standards. As in industry, if variances exceed the specified norm, attention is directed to the proper control points for possible action.

The process is obviously more complex when one moves to the academic functions, where lines of authority are blurred, the data elusive, and the faculty sensitive to interference. This has led many institutions to abandon attempts to measure and assess the unit costs of their instructional programs. Yet, financial data are sometimes indispensable if rational decisions affecting teaching and research are to be made. Thus, despite the difficulties in devising accurate measures and acceptable standards, it has seemed worthwhile to make serious efforts to develop unit costs in the instructional area.

The Nature of Unit Costs of Instruction

What, then, are unit costs of instruction? They are the cost per some specified unit of providing instruction: for a whole institution, for some school or college, for some discipline or field of instruction, for an individual department, for a single course or even for a particular section of a course. Costs for the larger units may also be broken down by the level of instruction (e. g., instruction in upper division courses in the school of education). In studies of faculty workload, student-faculty ratios, unit costs, and for projections of enrollment the use of the student credit hour (SCH) as the unit of "output" is almost universal in American higher education; indeed, there is a remarkable consistency in the way this concept is applied. We would argue that the SCH is not the best measure in studies of faculty workload or student-faculty ratios; however, since it uniformly measures student achievement,[5] centering upon values attributed by faculty to certain bodies of knowledge and degrees of skill, SCH is the best available index of the "output" of the teaching function.

One must then ask what costs should be identified with instruction, i. e., what input-costs should be related to the output unit, the student credit hour. The most important single determinant of instructional cost is clearly the salary of the teacher with whom the student has direct contact. A few other costs may be attributed to a particular class, e. g., the wages of "readers" used by the instructor in grading of exams, laboratory materials, etc. Also, it may be possible to allocate other costs at the departmental or school level to instruction in particular courses, e. g., mimeographing of course outlines, problems, exams, etc. Fortunately most of these other costs are small compared to salaries and can safely be ignored for present purposes. In the Cal-Big Ten study, an elaborate effort was made to allocate all departmental expenditures on some basis to individual courses. The value of this effort is questionable.

Attempts are also being made in some universities to make detailed allocations of other cost elements, such as library, maintenance and operation of plant, and even general administration. Where legislators or others demand this, the institution may have no choice but to comply; but for purposes of attention-directing or problem-solving, the more complete figure is usually less useful than one which eliminates indirect costs.

Unit Costs and Distribution of Faculty Time

Attention is directed now to two major questions which arise once the cost analysis has been narrowed to departments of instruction:

1. How much of the staff member's time (and salary) should be allocated to teaching?
2. How should that part of the staff member's time (and salary) which has been allocated to teaching be split among the several teaching assignments which he may have?

Some would argue that all staff time budgeted to a department of instruction should be allocated to teaching. This would solve the first problem very simply, and for certain institutions this may be appropriate. However, in some schools, e. g., agriculture, research undertakings are commonly budgeted to a department of instruction, with some professional staff engaged completely or almost exclusively in research, and with some faculty appointments split between teaching and research titles. In these situations, a degree of separation of the teaching and research functions has been recognized as a matter of policy; to attribute all costs to teaching would be unwarranted in these instances.

The question is more difficult where the research is that which has become generally known as "departmental." This is the research which every regular faculty member of a major American university expects as a part of his assignment and which he is expected to carry on in addition to his regular teaching duties. Here the usual argument for the inseparability of teaching and research is qualitative: effective teaching, at least at advanced levels, is best accomplished by one who is himself assaulting the ramparts of knowledge; teaching and research contribute to each other in countless ways; the university is by definition the place where teaching and research are joined.[6] But the fact that they are inseparable in this sense does not mean that two distinct outputs, teaching and research, cannot be specified and that inputs of time and cost due primarily (if not exclusively) to either teaching or to research cannot be determined with reasonable accuracy. This has importance beyond the mechanics of unit cost studies because there will be some limit, varying according to individuals, where the teaching load is so great that creative research becomes impossible and the effectiveness of teaching and research will suffer. If this situation becomes dominant, the qualities that define a university will be lost. Below this limit—and it is here that a practical problem for unit cost studies arises—the proportion between teaching and research can vary widely as a consequence of the number and type of courses which the instructor is required to teach, the assistance he gets, and the amount of "preparation" which he gives to his teaching.

In the Cal-Big Ten study, faculty workload was computed on a percentage basis, and this was used to allocate a specific percentage of the faculty member's time to teaching. This approach has obvious merits, but given the wide range in the number of working hours per week reported by faculty members, it has one major disadvantage that can be illustrated best by a single example: if two faculty members teach separate sections of a single course, each having the same salary and spending nine hours each week in contact with students and in "preparation" for class (including the grading of exams and course assignments, office hours, etc.), but one states that he spends 25 percent of his (36 hour) work week on teaching, whereas the other spends 16-2/3 percent of his (54 hour) work week on teaching, quite different amounts will be charged to instruction in the two cases by the percentage-of-time approach. This seems clearly unreasonable. To say that teaching costs more in the case of the man with the 36 hour work week because he does less research would indeed be strange; the same cost should be charged in each case.

One obvious method of achieving the same cost is 1) to specify some arbitrary but acceptable official work week, 2) to assign costs by taking the teaching time (including preparation) as a fraction of the work week, and 3) to apply that fraction to the hourly salary rate. Then the second of the two problems—allocating teaching time and salary between several teaching assignments—would be solved automatically, providing information was available from each member of the faculty about contact and preparation time for each of his courses. To date, it has seemed impractical to secure this data, at least without slowing drastically the gathering of data and without arousing the ill will of the faculty. We have, therefore, experimented with a "formula" approach which automatically assigns a given number of hours of preparation to each hour of "contact": 1) two hours of preparation for each hour of contact in lecture and seminar type instruction, and 2) one hour of preparation for each hour of contact in laboratory, quiz, discussion or activity type instruction.[7]

With the above approach, both the size of classes and the units earned by students have been shunted aside. Class size may be an important element in determining the time required of an instructor, but at most large institutions this tends to be offset by the assignment of auxiliary staff—readers and graduate student teaching assistants—to large classes. The time and cost of auxiliary staff must also be applied to the proper course and department. Units earned by students (i. e., student credit hours, the unit value of the course multiplied by the number of students) does not belong on the input side of the analysis, for it is a measure of student achievement, not a measure of faculty time or effort. It would, therefore, be misleading to gauge faculty workload by student credit hours taught. It would also be misleading to use the student contact hour (faculty time spent in class or in contact with individual students) as a measure of faculty workload, because of the widely differing amounts of time spent in "preparation" per contact hour.

The formula specified above was based on a detailed study of faculty time distribution in which 10 percent of the total number of persons bearing teaching titles in each discipline were randomly sampled by mail questionnaire. Respondents were requested to estimate the actual number of hours per week spent during one semester in the usual categories of teaching, research, administration, public service, etc. Teaching was separated by level of course (lower division, upper division, graduate), and type (lecture, seminar, laboratory, quiz-discussion-activity, and individual tutorial); further breakdowns were provided for graduate tutorials and guidance of graduate research. For each class taught (individual students in tutorials), instructors were requested to show separately both contact hours and preparation hours.

The response revealed a surprising consistency in the distribution of teaching time between preparation and contact. The major hypothesis was confirmed: that the ratio of preparation time to contact time varies according to the type of instruction (lecture, seminar, lab, etc.) but is relatively constant among the several disciplines. It was also found that course assignment policies within departments generally correspond to the results of the time study, e. g., fewer unit credits per faculty but more hours of contact in biology departments where the bulk of teaching is in laboratory courses, and vice versa in departments where lecture instruction prevails. When preparation time is applied by formula to individual cases, the teaching work week appears to be quite equitably adjusted among the various disciplines and within particular departments.

Of course, any formula based upon an average of many dissimilar situations is subject to doubt, rigorous sampling notwithstanding. Yet, even if it were practical to get current estimates from all the faculty as to actual preparation time, it would seem better to use the formula approach since this removes certain unwanted factors, e. g., the effect of the extra preparation required when a course is originated, revised, or taught for the first time. Although the effect of atypical situations would not be crucial for any large unit, it would distort the results for a particular course or even a small department.

Data Processing

The faculty time survey thus yields a set of ratios which may be applied consistently to each course offering in order to determine the time consumed in preparing for and teaching the course. Conversion of time to cost is adaptable to electronic data processing. In fact, since the study at the University of California embraces nearly the whole of the University's regular instructional program,[8] amounting to approximately 12,000 individual courses or sections of courses, manual processing would be virtually impossible. As it is, EDP does not do the whole job but, with greater refinement of reporting and programming, it is hoped that manual processing of the data will be eliminated eventually.

Reporting is accomplished with an 11×16 inch, 22 column machine accounting form. The information for each course or section is spread horizontally across the form, with entries for course number, section number, type of instruction (lecture, seminar, laboratory, etc.), unit value, scheduled meeting time and place, instructor name, and enrollment by level of student (in seven categories ranging from lower division to post-doctoral). Several other columns are available to accommodate special situations, e. g., hours of instruction for faculty and student, where these differ from the scheduled hours. Certain of this information is now recorded in the registrar offices by hand-copying, but two of the five campuses being studied are able to accomplish most of their reporting directly from IBM class cards with the aid of IBM 407 machines, and it is expected that further automation will be possible within the next year.

The rest of the processing is done centrally at the state-wide administrative office. Here the hundreds of schedules of classes submitted by campuses are edited for conformity to EDP programming, keypunched, and fed to IBM 1401 machines. There are two distinct phases of machine processing: one for the production of space utilization statistics; the other for faculty workload and cost figures.

Workload and cost information is derived from three basic calculations: "weekly teaching hours" for faculty time, "weekly student hours" for student time, and "semester hourly rate" for salary cost.

Weekly Teaching Hours (WTH) includes both contact hours—the scheduled meeting time of the class—and preparation time, supplied by formula according to the type of instruction (lecture, lab, quiz, etc.). Thus, at a preparation time to class time ratio of 2:1, a lecture class meeting three hours per week would carry an allowance of six hours of preparation time, or WTH of nine hours.

Weekly Student Hours (WSH) is simply the product of hours per week of class time and the enrollment of the class. A class of 30 students meeting three hours per week equals 90 WSH.

Semester Hourly Rate is computed individually for each member of the faculty who is teaching. On the basis of two semesters per year, six months of salary is applied to a 15 week semester of 40 hours per week.[9] From this is derived a figure representing the salary cost for one hour of work per week for one semester. (The hypothetical 40 hour week may be said to represent the time "purchased" by the University, though in fact most faculty members work much longer hours.)

These measures are computed and made available by the IBM 1401 for each course and each section meeting of virtually all the departments of instruction in the University. Further, totals of WSH and WTH may be accumulated for departments or groups of departments, schools, colleges, or campuses. They are combined in a number of ways to produce the following measures:

1. Weekly teaching hours per full-time equivalent (FTE) staff. This is the ratio of teaching hours per budgeted staff member. It is a better measure of faculty workload than either contact hours or student credit hours per FTE because it a) allows consistently for the differences in preparation time required for the various types of instruction, and b) avoids the distortion of taking unit value (a "reward" to students) as an element of faculty workload.

2. Weekly student hours per FTE staff. This is a measure of time students actually spend in contact with faculty, weighted by the number of students and compared to the number of staff budgeted for any given department, school, college, etc. It may be compared to the teaching hours per FTE figure, above, as a partial measure of workload; more importantly, it is a better measure of the student-faculty ratio than the old FTE student per FTE staff.

3. Aggregate costs for each class or section, each course, department, college, campus, etc. In its basic form, this is merely the product of WTH and semester hourly rate. This may be extended to include costs other than salary by taking the same proportion of other budgeted expenses as the salary costs bear to total budgeted salary, and pro-rating these to individual classes within a department according to the number of student hours taught in each class.

4. Unit costs. The cost per unit of output is

finally reached when student credit hours are divided into the gross cost obtained above. This may be computed for any one course, department, college, etc.

With appropriate programming, these figures may be broken down either by level of instruction (lower division, upper division, graduate), or by level of student (lower division, upper division, professional graduates, masters candidates, doctoral candidates, etc.).

The Uses of Unit Cost Data

The information described in the preceding section will be made available to appropriate officers of the state-wide administration and, for each campus, to the several Chief Campus Officers. It will permit these officers to obtain a concrete and objective picture of the unit costs of instruction in the areas under their control, in as much detail as they are likely to want or need. But, as has been emphasized above, if these data are to be useful for attention-directing purposes, they must be compared with some standard. In this field it may never be possible to establish an "engineered," objective standard. The present plan is to attempt to develop standards by means of 1) comparison with similar courses (departments, schools) on the same campus or on other campuses of the same institution; 2) comparison with similar departments in other institutions; and 3) comparison with historical data for the same department.

During the early years, this program will necessarily be limited primarily to intra-institutional analysis, analysis of the first type, but continuing and increasing efforts will be made to exchange data with other institutions which have similar programs; as a body of data is gradually accumulated, increasing attention will be given to historical analysis.

It is impossible in the present article to describe the many problem-solving uses to which this data will be put. Extensive use of it is already being made in the budget process, in long-range financial planning of new and emerging campuses, and in the development of program costs, especially in the area of graduate studies. Although what is being done represents only a beginning, it is felt that unit cost studies will become of increasing importance as the problems facing institutions of higher education grow in importance and complexity.

FOOTNOTES

* The authors wish to recognize their indebtedness to other members of the unit and particularly to Mr. Wesley F. Hall, now on the staff of the Budget Office, University of California.

1. A summary report of the findings was published in 1960. The detailed results were confidential and made available only to the several cooperating institutions: University of California, Indiana University, State University of Iowa, Michigan State University, University of Minnesota, Pennsylvania State University, Purdue University, Vanderbilt University, Wabash College, and the University of Washington.
2. For the record, it probably is desirable to note that we do recognize how crucial it is for the future of higher education in America that control be exercised responsibly; among other things, "responsible" in this context means responsiveness to the needs and wishes of each of the groups named, as well as to the public interest. For these reasons, faculty, administration, and legislature should each exercise some control, and in fact, each does exercise some control, though the distribution of control varies widely among the several states. See, e.g., John J. Corson, Governance of Colleges and Universities (New York: McGraw Hill, 1960); cf., Lyman A. Glenny, Autonomy of Public Colleges (New York: McGraw Hill, 1959).
3. For a detailed discussion of this question, see Herbert A. Simon, Harold Guetzkow, George Kozmetsky and Gordon Tyndall, Centralization vs. Decentralization in Organizing the Controller's Department (New York: Controllership Foundation, Inc., 1954).
4. See R. G. Brown and M. J. Draper, "Editing Financial Data for Management," The Controller, XXX, No. 4 (April 1952), pp. 151-57.
5. It cannot be said that the assignment of unit credits, particularly to graduate work, is always equitable from the student's point of view. But this is a minor flaw, and it is expected that the faculty, as they realize the importance of consistency in the assignment of unit credits, will cooperate to correct the situation.
6. To be consistent, however, research accomplished in special institutes and bureaus is equally applicable to teaching, and this introduces further complications in deciding which costs to attribute to teaching.
7. Special methods are employed for crediting preparation time to individual (tutorial) instruction, field courses, supervision of student teachers, etc. In each case, the formula is based on what is known about the particular situation.
8. Only the medical schools and University Extension are excluded. Separate studies are being made of costs in these areas.
9. Most faculty appointments are for nine months, but salaries are paid monthly the year round. Therefore, six months of salary may be attributed to each of the semesters, which are actually in session 15 weeks each. Most of the exceptional cases are handled routinely in machine processing, a few individually.

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FORMS FOR GATHERING DATA ON TEACHING LOADS

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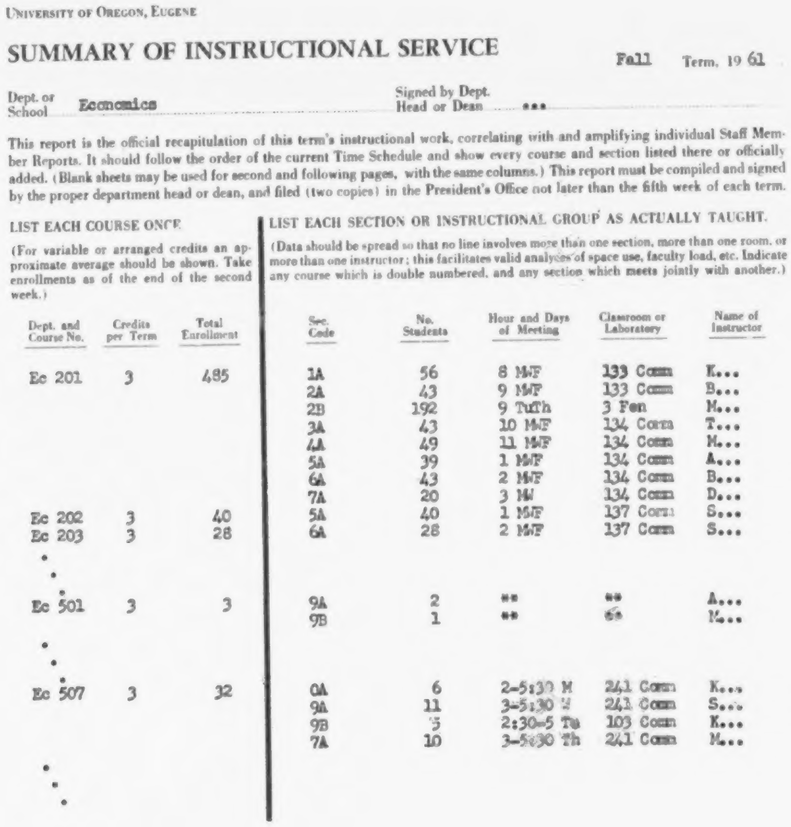
IN HIS WORK, the institutional researcher finds there is a need for a complete cross-section measuring instrument to give him concurrent and consistent data on enrollments, teaching loads, space utilization, budgets and costs, and other items. Where computers are used in student registration it is desirable to relate other data to enrollments and to introduce faculty, budget, and time and space information as needed for particular statistical products. This brief paper illustrates how faculty loads can be gathered as a basic statistic for integration with other related data.

The University of Oregon for a long period has used a blank on which individual faculty members record their many instruction-related and non-teaching tasks as well as their direct teaching loads. When used for research, the separate reports raised some questions such as: are two professors reporting the same students for a seminar in which they cooperate; is the graduate assistant conducting a particular laboratory section or is it the same one the professor reports for himself? For this reason, the department or school recapitulation form was devised and added to the regular routine. It may be noted that direct recopying from the individual forms to the summary form is kept to a minimum.

Many of the implications of these forms are quite obvious but may be mentioned. From the individual form, budget and full-time-equivalencies are related to departmental costs and to teaching loads and ratios. Clock hours spent with specific courses are the base for allocating staff full-time equivalents to courses and divisions and for computing student-teacher ratios. Other clock hours permit measuring the load of student advising and of committee work. On the departmental form the total course enrollments on the left of the heavy line are related to course enrollment and student-credit-hour tabulations and studies. Data on the right of the line describe teaching conditions, hence are used for class size, hourly distribution, space utilization, and countless other investigations.



UNIVERSITY OF OREGON, EUGENE

SUMMARY OF INSTRUCTIONAL SERVICE

Fall Term, 19 61

Dept. or School Economics

Signed by Dept. Head or Dean ...

This report is the official recapitulation of this term's instructional work, correlating with and amplifying individual Staff Member Reports. It should follow the order of the current Time Schedule and show every course and section listed there or officially added. (Blank sheets may be used for second and following pages, with the same columns.) This report must be compiled and signed by the proper department head or dean, and filed (two copies) in the President's Office not later than the fifth week of each term.

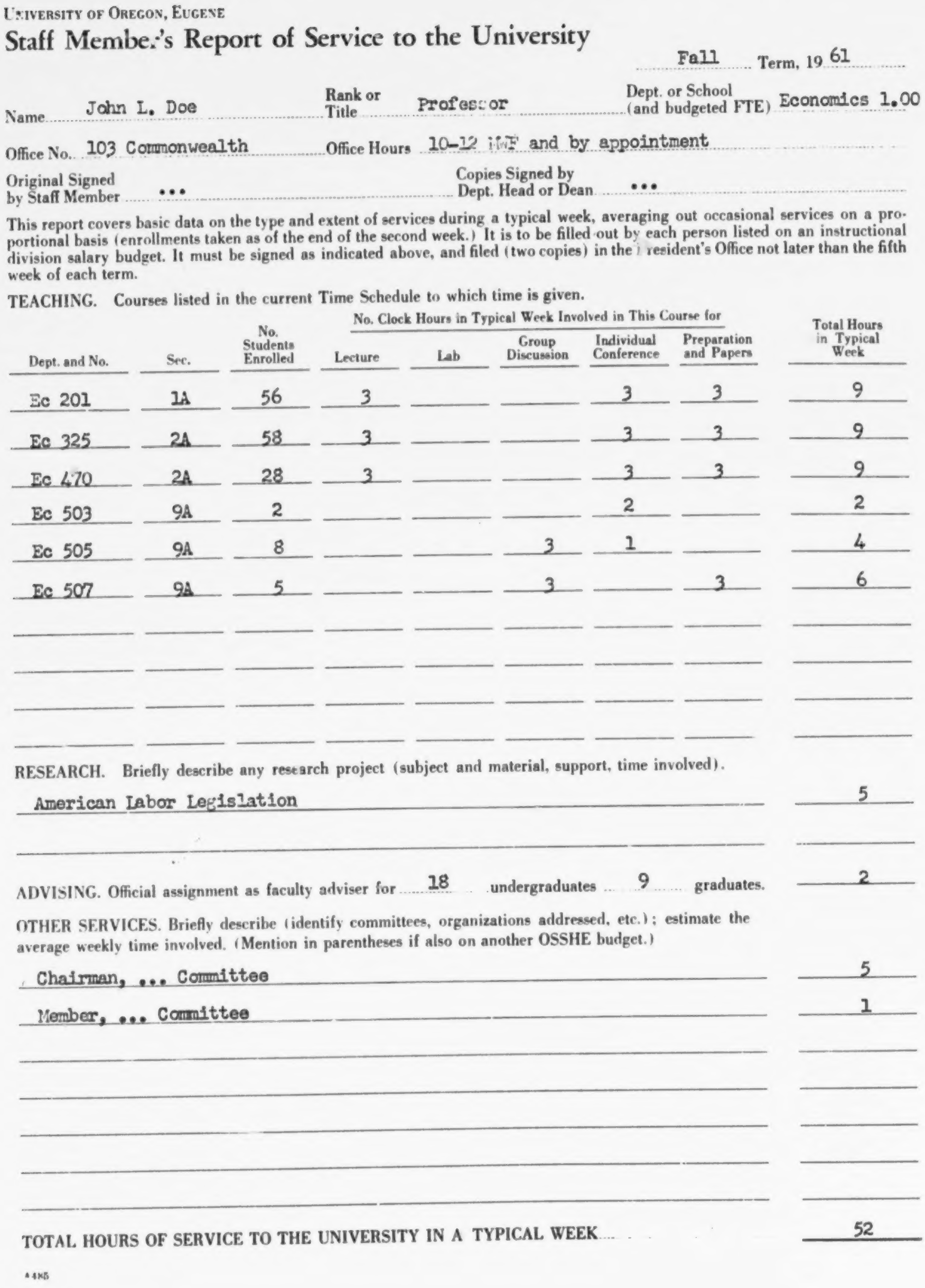
LIST EACH COURSE ONCE

(For variable or arranged credits an approximate average should be shown. Take enrollments as of the end of the second week.)

LIST EACH SECTION OR INSTRUCTIONAL GROUP AS ACTUALLY TAUGHT.

(Data should be spread so that no line involves more than one section, more than one room, or more than one instructor; this facilitates valid analyses of space use, faculty load, etc. Indicate any course which is double numbered, and any section which meets jointly with another.)

Dept. and Course No.	Credits per Term	Total Enrollment	Sec. Code	No. Students	Hour and Days of Meeting	Classroom or Laboratory	Name of Instructor
Ec 201	3	485	1A	56	8 MWF	133 Comm	K...
			2A	43	9 MWF	133 Comm	B...
			2B	192	9 TuTh	3 Fen	M...
			3A	43	10 MWF	134 Comm	T...
			4A	49	11 MWF	134 Comm	M...
			5A	39	1 MWF	134 Comm	A...
			6A	43	2 MWF	134 Comm	B...
			7A	20	3 MW	134 Comm	D...
Ec 202	3	40	5A	40	1 MWF	137 Comm	S...
Ec 203	3	28	6A	28	2 MWF	137 Comm	S...
⋮							
Ec 501	3	3	9A	2	**	**	A...
			9B	1	**	**	M...
⋮							
Ec 507	3	32	0A	6	2-5:30 M	241 Comm	K...
			9A	11	3-5:30 W	241 Comm	S...
			9B	5	2:30-5 Tu	103 Comm	K...
			7A	10	3-5:30 Th	241 Comm	M...
⋮							



UNIVERSITY OF OREGON, EUGENE

Staff Member's Report of Service to the University

Fall Term, 19 61

Name John L. Doe Rank or Title Professor Dept. or School (and budgeted FTE) Economics 1.00

Office No. 103 Commonwealth Office Hours 10-12 MWF and by appointment

Original Signed by Staff Member ... Copies Signed by Dept. Head or Dean ...

This report covers basic data on the type and extent of services during a typical week, averaging out occasional services on a proportional basis (enrollments taken as of the end of the second week.) It is to be filled out by each person listed on an instructional division salary budget. It must be signed as indicated above, and filed (two copies) in the President's Office not later than the fifth week of each term.

TEACHING. Courses listed in the current Time Schedule to which time is given.

Dept. and No.	Sec.	No. Students Enrolled	No. Clock Hours in Typical Week Involved in This Course for: Lecture	Lab	Group Discussion	Individual Conference	Preparation and Papers	Total Hours in Typical Week
Ec 201	1A	56	3			3	3	9
Ec 325	2A	58	3			3	3	9
Ec 470	2A	28	3			3	3	9
Ec 503	9A	2				2		2
Ec 505	9A	8			3	1		4
Ec 507	9A	5			3		3	6

RESEARCH. Briefly describe any research project (subject and material, support, time involved).

American Labor Legislation 5

ADVISING. Official assignment as faculty adviser for 18 undergraduates 9 graduates. 2

OTHER SERVICES. Briefly describe (identify committees, organizations addressed, etc.); estimate the average weekly time involved. (Mention in parentheses if also on another OSSHE budget.)

Chairman, ... Committee 5

Member, ... Committee 1

TOTAL HOURS OF SERVICE TO THE UNIVERSITY IN A TYPICAL WEEK 52

4485

THE JOURNAL OF EXPERIMENTAL EDUCATION
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A CONCEPT OF THE MEASUREMENT OF FACULTY LOAD

CHARLES E. HOWELL
Northern Illinois University

FACULTY LOAD has long been limited to the narrow concept that the number of credit hours taught is an adequate measure of any individual staff member's entire work load. However important this aspect of the duties of a teacher may be, it is certainly not the whole job which he is called upon to do, and the mere number of hours of credit taught is certainly not an adequate measure even of that part of his job.

Any acceptable measure of total load must take into account not only all of those factors which the institution recognizes as part of the instructor's job, in the sense that it expects him to perform them even though they may not actually be included as a specific part of the contractual relationship, but it must also take into account those tasks which an individual feels are a burden upon him when he comes to perform them. Obviously then, there are far more factors in the total load picture than are reflected by any simple statement as to the number of hours taught.

Aspects of a Measurement System

Any method which seeks to broaden this measurement of total load must have at least two parts: 1) identification of the various aspects of load as recognized by both the institution and the faculty member and 2) weighting of the various aspects for comparability between faculty members. The measurement of these factors must be as objective as possible. The various factors must lend themselves to combination for comparison of one faculty member with another and to combination for comparison of departments. Combination of the various aspects must also be such that the different aspects of load can be identified within the entire institution. Finally, the method must be simple enough so that it can be easily understood and applied.

Faculty Load Measurement at Northern Illinois University

Identification and Weighting

This report illustrates how such a method has been worked out and applied at Northern Illinois University. The identification of the various aspects of load and the weightings assigned are shown in Chart I. Code numbers are given in this chart for easy reference to the tables which follow. The identification was worked out in conference with the academic vice president and the various deans and later was modified by suggestions of department heads. Certain weighting relationships already existed such as the relationship of undergraduate to graduate work, on-campus work to extension, and laboratory work to lecture courses. These relationships were carried over into the new weighting and extended.

Data were collected from each faculty member by use of the form of Chart II. The forms were collected through the department heads, who inspected and initialed them. The questionnaire of Chart II is filled in with illustrative data.

Computation of Individual Scores

Upon receipt of the questionnaires all data were checked insofar as possible with the class load schedule, the university committee list, and other objective university records. The method of computation of the individual score may be seen from the following illustration based on the data of Chart II.

Staff member XYZ has seven hours of undergraduate courses, W217, W316, W472. At 10 points for each hour he receives a credit of 70 points. He has the graduate course, W561, for two hours, for which he receives 30 points at 15 points for each hour. He has the course, W472, for three hours taught in extension. He receives 15 extra points for this. He teaches W217 as a laboratory course meeting two extra laboratory hours weekly, for which he receives 10 points.

He drives 105 miles to the extension course and receives two points for each additional 10 miles or fraction thereof over 80 for a total of six points. In W316 he has 43 students which is an excess of 13 above the 30, for which he receives one-fourth point each or a total of three. He has somewhere between one and 10 undergraduate advisees, for which he receives five points. He has the same number of graduate advisees, for which he receives 10 points.

He has one person enrolled in W497 for independent study for which he receives three points. He is

CHART I

POINT SCHEDULE FOR STAFF LOAD*

Code	Points	Aspect of Load
A	10	Each hour of undergraduate work taught
B	15	Each hour of graduate work taught
C	5	Additional points for each hour taught in Extension
D	5	Additional points for each laboratory hour taught (7 points for graduate laboratory)
E	2	Additional points for each 10 miles or fraction thereof for mileage in Extension over 80, but not more than 10 points
F	$\frac{1}{4}$	For each individual enrollment over 30 in each class, not cumulative from class to class - rounded to nearest whole for total
G	5	For each 10 or fraction thereof undergraduate advisees
H	10	For each 10 or fraction thereof graduate advisees
I	3	For each individual enrolled for independent study (private lessons in music: 3 points per individual for $\frac{1}{2}$ hour course, 5 points for 1 hour course)
J	5	Each graduate paper currently directed
K	10	Each hour of released time for whatever purpose
L	2-8	For membership on each University committee
M	10	For each University committee chairmanship held (standing committees only)
N	2-10	For holding office in a state or national organization
O	10	For each additional preparation beyond 3 (Except for activity courses where 3 points are assigned)

*There is no duplication if time is released for committee work or because of state or national offices held. Points are assigned for the released time and not for the committee work.

CHART II

INSTRUCTIONAL LOAD FIRST SEMESTER 1960-1961

NAME XYZ DEPARTMENT W

TEACHING DUTIES

Course and Section Number	Credit Hours	Hours Met Weekly	Enrollment	Miles Traveled Weekly if Extension Course
W561 - 1	2	2	21	
W217 - 2	2	4	17	
W316 - 1	2	2	43	
W472	3	3	29	105
W497 (IND. STUDY)	3	--	1	

ADVISEES

(check one only in each column)

Number	Undergraduate	Graduate
0		
1-10	X	X
11-20		
21-30		
31-40		
41-50		

NUMBER OF GRADUATE PAPERS which you are currently actively directing: 1 (Those of candidates scheduled to get the degree by August, 1961. If none, write "none.")

RELEASED TIME

Specific duties for which you are given release from teaching (include department headships, athletic coaching, debate, dramatics, consultant services, regularly recurring conferences, etc.)

Duty	Hours Released
RESEARCH	2

COMMITTEES

University committees to which you are assigned. Underline if you are chairman. Do not include departmental committees.

GRADUATE COUNCIL	INTERNAL BUDGET COMMITTEE
FEE ASSESSMENT COMMITTEE	

OFFICES HELD

National or state organizations of which you are an officer. Indicate organization and office and approximate number of hours required per week through the current semester.

VICE-PRESIDENT, NATIONAL W...TEACHERS ASSOCIATION	2 HRS./WK.
STATE CHAIRMAN, LEAGUE OF INDEPENDENT VOTERS	

currently directing one graduate paper for a candidate who is expected to get his degree prior to September, 1961, for which he receives five points. He is released officially from two hours of teaching for research, for which he receives 20 points.

He is a member of the Graduate Council, which is a major standing committee, meeting monthly, for which he receives five points. The Fee Assessment Committee, of which he is a member, serves only for a few hours during the registration period at a time when no classes are scheduled, and hence he receives no credit for this. He is the chairman of the Internal Budget Committee, for which he gets 10 points. He also receives no credit as state chairman of the League of Independent Voters since this is a civic and not a staff responsibility. He is, however, the vice president of a national teachers association which gives him three points if the work is considered to be spread over the academic year. He has four preparations exclusive of his independent study, for which he has received specific credit; hence he gets 10 points for the additional preparation beyond three. All of this gives him a total of 205 points.

Individual scores were collected by the department in which the individual served. If he taught in more than one department, the score was apportioned between the departments involved although his major score was assigned to the department to which he was contractually assigned. Table I gives a complete departmental listing, together with the footnotes which explain the point assignments. These complete footnotes were furnished to all department heads and academic deans and were available for inspection by the faculty members within a given department. Each department head was given the open lists of his own department but only coded names for members of other departments.

Load Summaries

A sample of the load summaries by selected departments in terms of point scores is shown in Table II. The same information by percentages by selected departments is shown in Table III and in graph form for the university as a whole in Chart III. Mean loads of full-time staff are shown in Table IV.

The "Normal" Load

In attempting to arrive at some kind of a norm, the mean points of all full-time instructional staff were calculated. Part-time staff were not included in the establishment of the individual or departmental mean load as a total. However, the work of part-time staff members was included in computing the total load of the department in its various aspects as well as the total load of the university as a whole.

Since the mean of the individual point scores is admittedly subject to variation, the normal load was defined as being a range of point scores extending one probable error on either side of the mean of the total distribution. This central range statistically encompasses 50 percent of the scores. Table V shows by department the number of individuals on a full-time basis who fell within this 50 percent (25% on either side of the mean) as well as those who fell from one to two probable errors on either side of the mean, roughly 16.13 percent in each case, and those who fell more than two probable errors on either side of the mean, 8.87 percent in each case.

Reference to this table and to the detailed departmental breakdowns will enable the identification of individuals and/or departments with varying degrees of over-and under-load.

Results of the Study

In extreme cases there may be aspects of load factors which are not uncovered by consultation either with the staff member concerned or with the department head. Therefore, the extremes particularly should be viewed with caution. Also, departmental averages, particularly in the case of newly established or very small departments, must be considered in the light of these aspects of load factors. However, it is believed that on the whole this procedure has objectively identified the factors entering into the total load of the instructional staff of the University. The study also throws light on the distribution of recognized aspects of load throughout the university which could be, although they have not been at Northern Illinois University, translated into cost estimates.

TABLE I

POINT ASSIGNMENTS FOR FACULTY OF "A" DEPARTMENT

Code Number	Aspect of Load															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Total
0065	140	--	--	25	--	8	15	--	--	--	--	--	--	--	10	198
0243	60	90	--	36	--	--	--	10	--	--	--	5	--	--	10	211
0310	60	--	--	15	--	--	15	--	3	--	60	4	--	5	--	162
0360	60	--	--	30	--	--	--	10	--	15	60	5	--	3	--	183
0370	35	45	--	--	--	44	--	20	--	10	30	--	--	--	--	184
1070	120	--	--	20	--	9	10	--	--	--	--	--	--	3	--	162
1297	110	--	--	30	--	6	--	--	--	--	--	--	--	--	--	146
1302	100	--	20	30	10	--	--	--	--	--	--	--	--	--	--	160
2230	90	--	--	45	--	--	10	--	--	--	20	2	--	--	--	167
2261	105	--	--	40	--	44	--	--	--	--	--	--	--	--	--	189
2373	60	--	--	30	--	--	--	--	--	--	30	--	--	--	--	120
2540	90	--	--	30	--	--	--	--	3	--	--	3	--	--	--	126
TOTAL POINTS	1030	135	20	331	10	111	50	40	6	25	200	19	--	11	20	2008
AVERAGE POINTS																166.7
% of Total	51.3	6.8	1.0	16.5	.5	5.5	2.5	2.0	.3	1.2	10.0	.9	--	.5	1.0	100.0

1. 0243 receives 5 points as a member of the Graduate Council.

2. 0310 has 3 hours of released time as director of the Art Gallery and 3 hours for work in Regional Services. Receives 2 points as a member of the Homecoming Committee, 2 points as a member of the Instructional Materials Advisory Committee, and 5 points as the editor of I.A.E.A. Directions.

3. 0360 has 6 hours of released time as chairman of the General Education Advisement Program. Receives 3 points as a member of the Teacher Education Advisory Council, 2 points as a member of the Instructional Materials Advisory Committee, and 3 points as chairman of the editorial board of the Illinois Art Education Association.

4. 0370 and 2261 teach section 2 of Art 214 together. The points for the course are divided equally between them.

5. 0370 has 3 hours of released time as head of the department.

6. 1070 receives a total of 3 points as scholarship chairman of Delta Kappa Gamma and as secretary of the local AAUP chapter.

7. 2230 has 2 hours of released time for making slides for lectures on the history of art. Receives 2 points as a member of the Artists and Lecture Board.

8. 2373 has 3 hours of released time during which he is assigned to the Dean of the College of Fine and Applied Arts.

9. 2540 receives 3 points as a member of the General Education Advisement Committee.

TABLE II

DISTRIBUTION OF POINT SCORES BY ASPECT OF LOAD AND BY SELECTED DEPARTMENTS

Department	Aspect of Load															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Total
Art	1030	135	20	331	10	111	50	40	6	25	200	19	--	11	20	2008
Biological Sciences	1620	105	--	219	10	267	160	110	18	40	170	21	--	10	50	2800
Bus. Ad. & Bus. Educ.	3060	195	20	75	10	131	485	140	69	175	220	40	--	21	40	4681
Chemistry	860	30	--	272	--	27	113	75	3	10	80	25	15	9	--	1519
Earth Science	930	90	--	90	--	49	80	90	--	50	210	20	--	8	--	1617
Education	3170	1170	120	475	26	58	415	810	--	500	410	75	10	30	20	7289
Etc.																
TOTAL	29205	3315	296	3110	114	1792	2795	2110	908	1205	5454	464	115	194	599	51676

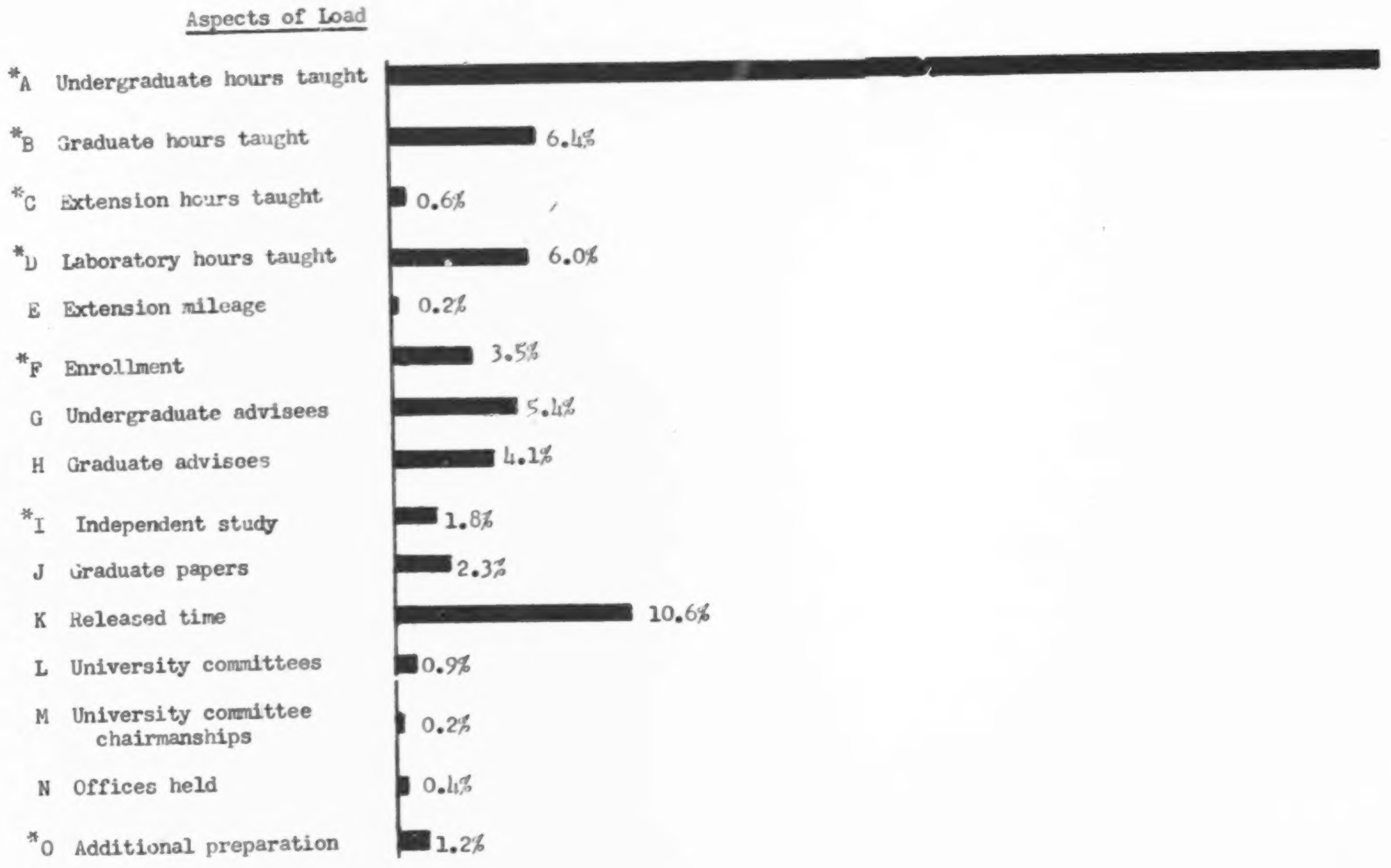
TABLE III

DISTRIBUTION OF ASPECTS OF LOAD BY PERCENTAGE OF LOAD
BY SELECTED DEPARTMENTS AND FOR THE UNIVERSITY AS A WHOLE

Department	Aspect of Load														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Art	51.3	6.7	1.0	16.5	.5	5.5	2.5	2.0	.3	1.3	10.0	.9	--	.5	1.0
Biological Sciences	57.8	3.8	--	7.8	.4	9.5	5.7	3.9	.6	1.4	6.1	.8	--	.4	1.8
Bus. Adm. & Bus. Educ.	65.4	4.2	.4	1.6	.2	2.8	10.4	3.0	1.5	3.7	4.7	.8	--	.5	.8
Chemistry	56.6	2.0	--	17.9	--	1.8	7.4	4.9	.2	.7	5.3	1.6	1.0	.6	--
Earth Science	57.5	5.6	--	5.6	--	3.0	4.9	5.6	--	3.1	13.0	1.2	--	.5	--
Education	43.5	16.1	1.6	6.5	.4	.8	5.7	11.1	--	6.9	5.6	1.0	.1	.4	.3
Etc.															
All Departments Combined	56.5	6.4	.6	6.0	.2	3.5	5.4	4.1	1.8	2.3	10.5	.9	.2	.4	1.2

CHART III

DISTRIBUTION OF ASPECTS OF LOAD BY PERCENTAGE OF LOAD FOR THE UNIVERSITY AS A WHOLE



*Directly related to class instruction.

TABLE IV

MEAN LOAD IN POINTS OF FULL-TIME STAFF
BY SELECTED DEPARTMENTS AND FOR ALL DEPARTMENTS COMBINED

Department	Number of Full-Time Staff	Total Point-Load of Full-Time Staff	Mean Point-Load of Full-Time Staff
Art	12	2008	166.7
Biological Sciences	14	2800	200.0
Bus. Adm. & Bus. Educ.	23	4421	192.2
Chemistry	8	1390	173.8
Earth Science	9	1617	179.7
Education	38	7153	188.2
Etc.			
TOTAL	283	49722	175.7

TABLE V

DISTRIBUTION OF FULL-TIME STAFF BY SELECTED DEPARTMENTS
IN TERMS OF LOAD AS RELATED TO PROBABLE ERROR DISTANCE
FROM THE MEAN LOAD OF ALL FULL-TIME STAFF

Department	Within 1 P.E. of the Mean (middle 50%)	Below the Arithmetic Mean		Above the Arithmetic Mean	
		1 P.E. - 2 P.E. (16.13%)	2 P.E.+ (8.87%)	1 P.E. - 2 P.E. (16.13%)	2 P.E.+ (8.87%)
	Score 152-199	Score 128-151	Score below 128	Score 200-223	Score above 223
Art	8	1	2	1	—
Biological Sciences	4	--	1	7	2
Bus. Adm. & Bus. Educ.	13	3	1	3	3
Chemistry	6	1	--	1	—
Earth Science	7	1	--	1	--
Education	18	5	2	3	10
Etc.					
TOTAL	158	44	23	33	25

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EDUCATIONAL FORECASTING AT THE UNIVERSITY OF AKRON*

D. J. GUZZETTA
The University of Akron

> "If a man does not know to what port
> he is sailing, no wind is favorable."
> Socrates

THE FORECASTING of educational needs for an institution of higher education is a complex and variable matter. Yet, the college or university that fails to maintain such a practice on a continuing and organized basis will find itself in difficulty as larger enrollments reach the doorsteps of our educational institutions beyond the high school.

The University of Akron, recognizing the need for such planning, both from a short and long range point of view, launched into an extensive analytical study of this type in 1957. Since then, detailed projecting and planning have gone on side by side with the end result being a well-informed faculty, staff, administration, and Board of Directors.

Effective planning for increased activity cannot leave any stones unturned. Consequently, The University of Akron examined several areas of institutional concern. It was agreed, however, that the point of departure for the study should be the potential and expected enrollment through 1970. On the basis of detailed projections arrived at through a purposive consideration of existing procedures and practices, requirements in curricula, physical facilities, finances, size and type of faculty, instructional techniques, student personnel services, library services and administration were studied. This was accomplished by local staff and selected national experts in particular fields. The end results taken as a whole have served as a "blueprint" for present and future institutional planning.

To illustrate the nature of the research involved as well as some of the techniques utilized, particular attention will be devoted to how enrollment, faculty and physical facilities needs were forecasted.

Enrollment

Forecasting enrollments at The University of Akron began with an intensive study of enrollments over the past 20 years. A number of pertinent facts were revealed as available data were analyzed. For example, enrollment breakdowns showed that almost consistently approximately 90 percent of the total day and evening students commute to and from the University. Also, since a large number of the students work at outside jobs while in attendance, average student academic loads are slightly below normal. The end result is that many students take more than the usual eight semesters to complete their educational objective. It was also noted that while in general about 80 percent of each entering freshman class is made up of graduates from Akron area high schools, about 15 percent of the total freshman student body finished high school prior to the previous June.

With these data as background, the school systems in the Akron area were solicited for information regarding their grade-by-grade enrollments and their predicted individual survival percentages class by class. Public, private, and parochial schools were involved. Also, non-Akron schools were studied in terms of past enrollment practices. On the basis of the statistics collected plus prior patterns of detailed enrollment figures at the University, future entering day freshman classes were predicted from 1958 to 1970. These projections were made on the assumption that a number of existing conditions, practices, and patterns of operation would continue to be applicable in the overall picture.

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[*] For detailed specifics regarding techniques used and depth studies conducted, please contact the writer. He will be pleased to expand in any of the areas described above or alluded to in this article.

Being cognizant of the many variables that enter into an enrollment forecast of this type, four freshman projections were made, each based upon specific assumptions. In this way, the more pertinent considerations were appropriately grouped into logical patterns. The end result was that forecasts were made on the basis of clear and explicit basic assumptions. Without such a basis, forecasting becomes mere guesswork and speculation.

Certain assumptions seemed applicable to all four projections. They were arrived at after careful study of the local situation and other student-producing areas outside of Akron. In brief, these assumptions dealt with the reliability of the data provided the University by the various high schools, the continuing attraction to the University of regular quotas of students, the increased interest on the part of high school graduates to attend institutions of higher learning in general and The University of Akron in particular, the supposition that no other institution of higher education will be established in Akron, and the probability that the same percentage (15%) of returnees, transfers, and entering freshmen from classes other than the immediately preceding June high school graduating class would be maintained.

The first (number 1) of the four projections was deliberately developed as minimal. Basically, it was structured assuming no percentage change in higher education interests, no change in University policies, fees or curricula, but with a slight increase in enrollment due to the presence of more graduates.

Projection number 2 included the same assumptions referred to under number 1, with the exception that the Akron youth population interested in attending The University of Akron will follow national predictions with a one percentage point increase annually through 1970.

The next projection (number 3) took into consideration the possibility of extending the University influence beyond the city limits of Akron. For example, even though The University of Akron was originally established as a municipally oriented institution and its primary source of income comes from the city itself, its financial base could be enlarged to include outlying taxing districts. In effect, this could mean a slight reduction in the present differentiation in fees that exists between residents and non-residents. This, then, would attract a larger percentage of non-residents and thereby add to the University student body.

Under projection number 4, this financial base is assumed to be further expanded to the point where the University would become completely county wide and in this way eliminate, to a large degree, the present fee differential. Also, new curricula would be added to serve a larger population base. Under this plan, the increase in student interest in higher education at The University of Akron would rise by approximately one percent per year throughout the county as a whole. Under number 3, however, the increase would amount to about one-half of one percent per year. Table I identifies the freshman day totals developed through these four projections.

To arrive at total day enrollments, four projections also were developed using the same assumptions described for freshman totals. On the basis of the official record of total enrollments over the past 20 years, the following formula was applied in each projection.

Total enrollment = 85% of the three previous Fall freshman classes plus the projected freshman enrollment for the particular year.

This was validated by applying the formula to every academic year back to 1937 and in no instance was the variation greater than 25. Table II lists total projected day enrollments based on this procedure. Table III shows the forecasted evening enrollment figures. The latter were arrived at by using "A" and "B" projections. The "A" forecasts represent approximately 90 percent of expected day enrollments while the "B" column assumes a 95 percent total. In the judgment of the University, Column "A" will probably be more nearly accurate.

Faculty

The primary function of a university is to create an atmosphere favorable to and provide the means for learning at an academic level beyond the high school. To do this effectively, an institution of higher learning must be endowed with a top level, able faculty.

It is no secret that obtaining the academic services of well-qualified faculty is going to be a major area of consideration for the future. Without such personnel, a university has little reason for being. Therefore, faculty needs must be determined early in order to be prepared to carry on the various educational services. This important area of faculty needs, then, loomed as a major point of examination in the forecasting of required short and long range personnel resources.

The University of Akron arrived at a determination of faculty needs by projecting the student credit hour demands. Since at this institution student costs are arrived at on the basis of the number of credit hours a person takes, an average student credit hour load was used to project student credit hour demands over the next several years. The procedure was a particularly significant one, inasmuch as the average semester student credit hour load is approximately 14 hours, and so faculty,

TABLE I

FRESHMAN DAY FALL ENROLLMENT PROJECTIONS 1958 - 1970

Year	Projection Type No. 1	No. 2	No. 3	No. 4
1958	630	690	650	650
1959	675	720	735	905
1960	910	970	1005	1125
1961	810	1025	1065	1330
1962	810	1050	1120	1420
1963	820	1090	1175	1520
1964	940	1300	1390	1835
1965	1040	1485	1605	2165
1966	1050	1500	1700	2200
1967	1025	1550	1775	2300
1968	1000	1500	1800	2350
1969	1100	1650	2000	2600
1970	1250	1800	2200	2900

TABLE II

TOTAL DAY FALL ENROLLMENT PROJECTIONS 1958 - 1970
(Rounded to nearest five)

Year	Projection Type No. 1	No. 2	No. 3	No. 4
1958	2440	2500	2460	2460
1959	2400	2500	2465	2645
1960	2850	2900	2950	3075
1961	3150	3250	3300	3550
1962	3300	3600	3700	4240
1963	3400	4000	4100	4950
1964	3425	4225	4500	5700
1965	3625	4650	5020	7190
1966	3800	4800	5200	7300
1967	4000	4900	5350	7550
1968	4050	5000	5500	7800
1969	4100	5100	5600	8000
1970	4200	5400	5900	8500

TABLE III

TOTAL EVENING CREDIT FALL ENROLLMENT PROJECTIONS 1958 - 1970
(Rounded to nearest five)

Year	No. 1		No. 2		No. 3		No. 4	
	A	B	A	B	A	B	A	B
1958	2200	2320	2250	2375	2210	2350	2210	2350
1959	2150	2275	2250	2375	2225	2350	3400	2500
[illegible]	2200	2700	2300	2750	2350	2800	2700	2900
1961	[illegible]	[illegible]	2950	3100	3125	3225	3200	3375
1962	[illegible]	[illegible]	3250	3450	3350	3525	3800	4000
1963	[illegible]	[illegible]	3550	3725	3700	3900	4450	4700
1964	[illegible]	3250	3850	4025	4050	4275	5150	5425
1965	3275	3450	4200	4425	4500	4775	6475	6825
1966	3425	3500	4350	4550	4700	4850	6570	6950
1967	3600	3700	4410	4650	4815	5000	6795	7100
1968	3645	3750	4500	4750	4950	5100	7020	7300
1969	3690	3800	4600	4850	5040	5200	7200	7500
1970	3780	3900	4900	5000	5310	5400	7650	7900

TABLE IV

PROJECTED DEMAND FOR FULL-TIME FACULTY EQUIVALENTS
1958 - 1970 FALL SEMESTERS

Year	Student Credit Hour Demand			Demand for Full-Time Faculty Equivalents
	Day	Evening	Total	
1958	33,750	10,575	44,325	141
1959	33,669	10,552	44,221	140
1960	39,204	10,843	50,047	159
1961	43,808	13,724	57,532	183
1962	48,749	15,275	64,024	203
1963	53,082	16,633	69,715	221
1964	57,227	18,025	75,252	239
1965	62,883	19,702	82,585	262
1966	64,800	20,304	85,104	270
1967	66,150	20,727	86,877	276
1968	67,500	21,150	88,650	281
1969	68,850	21,620	90,470	287
1970	72,900	23,030	95,930	304

income and facilities are planned for on a less than normal load. In this way, a more exacting working base could be used in forecasting total needs.

For the purpose of the faculty analysis, it seemed meaningful to go a step further and to deal with forecasts of full-time faculty equivalents or FTFE. An FTFE was defined as a teaching load of 12 credits — a "normal load." Also, for purposes of faculty equivalent projections, both day and evening student credit hour demands were considered. This was arrived at as follows.

First, the years from 1952 to 1957 were selected as the base period from which to project. The actual student credit hours produced during this period were determined, and then the fall semester totals were divided by 12 to arrive at an index of the mean number of student credit hours per full-time faculty equivalent. The mean for the five-year period was 315 per semester, and this therefore was regarded as the measure of productivity of the faculty during these years. It was agreed that at least the same load level would prevail over the next several years.

The projected student credit hour demands arrived at on the basis of enrollment forecasts and average subject matter loads were then divided by 315 to arrive at full-time faculty equivalents required in the future for each fall semester. The results are shown in Table IV but only on the basis of student projection number 2. It should be noted that no attempt was made at this time to determine how many part-time faculty should be planned for. It seemed best to retain that flexibility for planning purposes each year. The availability of qualified full-time faculty members would determine the extent of part-time faculty participation in the total day and evening program.

Physical Facilities

A growing student body and a growing faculty require appropriate physical facilities that will aid both groups in achieving their educational objectives. Specifically, this means adequate classrooms, offices, library facilities, and dormitories. Accordingly, the point of departure for this phase of the University's forecasting task was the accumulation of factual information on the present utilization of existing facilities. This study was accomplished in accordance with a widely used manual on space utilization by Russell and Doi. *

As a result of this facilities study, the following information was assembled to provide a basis for detailed planning and analysis:

(1) Summary of square feet, student stations, number of rooms and average square feet of floor space per student station in the instructional facilities.

(2) Summary of rooms and student stations available during the week according to morning, afternoon, and evening use and percentage of use as well as by functions of rooms.

(3) Summary of the use of laboratories.

(4) Distribution of the number of day class period meetings per week by enrollment of classes in relationship to the capacity of the rooms in which current classes were held.

(5) Summary of percentage of station use when classrooms were actually in use during the academic year under study.

Volumes of statistical data resulted, and the findings were analyzed in terms of next steps to take as the availability of space becomes crucial. Such conclusions as the following provided the norm from which to build, inasmuch as operational efficiency and effectiveness was at an adequate level at the time of the study and for the current enrollment.

(1) The gross square feet of space on the campus averaged 200 square feet per full-time equivalent day student and 160 square feet per full-time equivalent day and evening student.

(2) The academic program was housed in twelve different buildings providing 3,316 student stations in general classrooms, 1,411 student stations in instructional laboratories, and 243 student stations in other instructional rooms for a total of 4,970 student stations. This amounted to an average of 19.2 square feet of assignable space per student station.

(3) Ninety percent of the classes that met in general classrooms were in facilities which had more student stations than class enrollment. In instructional laboratories, 73 percent of the classes met in facilities having more student stations than the class enrollment.

(4) When in use, general classrooms were 48 percent filled to capacity and instructional laboratories were 61 percent filled to capacity.

Certainly it is obvious that 100 percent space utilization for all types of facilities during a full week's university operation would be most difficult, if not impossible, to achieve. Scheduling complications for both students and faculty would provide the most serious obstacle to full utilization. Therefore, the existing pattern, with a wider range of class distributions, was projected into the future to determine what new facilities would be required

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* John Dale Russell and James I. Doi. Manual for Studies of Space Utilization in Colleges and Universities, a service of American Association of Collegiate Registrars and Admissions Officers (Washington, D.C.: Publications Office, American Council on Education, 1957).

to assure a continued effective operation. The application of sound, reasonable, and practical principles in this building program followed.

As an illustration, it was discovered that only 415 actual student seating stations were available in the library. This represented less than 10 percent of the total student body, day and evening. According to experts, 20 to 50 percent of the total student enrollment is considered to be the ideal seating capacity in a well-planned library. Taking a minimal percentage of 20 percent of the total student body for planning purposes, this figure was projected into future needs including the introduction of more carrel space for study purposes. Also because of the substantial student increases expected, the expanded graduate program under consideration, and the existing cramped stack space available, there appeared to be no question but that the "intellectual center" of the campus also needed expanding for additional book stacks.

A compilation of all available data assisted the University in pinpointing its facilities needs on a priority basis. The conclusion reached was that with the exception of the library and a dormitory (a new development at the University), the increased enrollments anticipated between 1958 and 1961 could be accommodated provided tight and efficient use of space would follow. Building needs were then established in priority order as follows: (1) a library addition (1959); (2) a dormitory (1960); (3) a general classroom building (1962); (4) two more dormitories (1962); (5) a second general classroom building (1964); (6) an administration building (1966); (7) a special purpose instructional-laboratory type building (1968).

Conclusion

Experience has shown that institutional studies, such as the one reported here, conducted principally by local University staff are of great value to the institution. Sometimes they are more helpful than those accomplished by outside agencies. Among the advantages directed towards this internal approach are that campus personnel can establish their own objectives, determine the problems to be studied, and apply predetermined procedures and techniques to the actual operation of the study. The tasks or issues at hand are more important to the local staff than to outsiders; hence they are more intent upon achieving discernible results.

The opportunity to utilize local staff to assist in the accumulation and interpretation of data and the freedom to call in special consultants on a need basis would seem to result in more effective decisions. This is so since they are based on a combination of judgments made from the practical experiences of local staff and the varied experiences in higher education of the outside experts.

In a sense, every institution of higher education is unique, regardless of its many commonalities with similar type organizations. The communities in which educational institutions are located are different. Their physical setting and environment, although comparable, are unlike other seemingly identical institutions. The human and financial resources available in each situation vary. Each locale has its own idiosyncracies that need to be taken into account. Therefore, generalizations, in terms of acceptable procedures and solutions to problems, cannot be applied without becoming influenced by historical "accidents" responsible for much of the "status quo." At the same time, the experiences of the authorities in the field provide the basis for recommendations aimed at helping an institution of higher education maintain its individuality while holding on to its academic respectability.

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FACULTY SATISFACTIONS AND DISSATISFACTIONS

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THE IDEA for a study of faculty satisfactions and dissatisfactions had been developed over a period of years at New York University by the Committee of the Elected (faculty) Members of the Senate of the University. After the establishment of the University's Office of Institutional Research in 1958, that Office agreed to take responsibility for carrying on the study. The Committee of the Senate continued to be in constant touch with the study throughout its development and gave valuable advice on the method and content to be used.

The study was conducted by means of a Questionnaire distributed to all full-time members of the New York University faculty in May, 1959. Respondents were asked not to sign the Questionnaire. Returns were received from only about 45 percent of those who were asked to report. A careful and critical analysis of the returns shows that they provide an excellent sample of the entire group of full-time faculty members, with respect to a number of personal characteristics on which comparisons between the sample and the entire faculty group could be made.

The Questionnaire

The Questionnaire* was long, consisting of 15 pages of items, in check-list form, to which reactions were asked. The items were divided into six major parts. Part I contained 11 items identifying certain characteristics of the respondents, such as the School or College of the University with which connected, academic rank, age, University salary, highest earned degree held, and years of service at New York University.

Part II consisted of a list of 88 items giving situations for which respondents were asked to indicate on a 9-point value scale their general feeling of satisfaction or dissatisfaction at New York University. The instructions were to check the midpoint on the scale, 5, if the condition mentioned in the item was one for which the respondent's satisfaction and dissatisfaction were approximately equal. The response-value of 5 is thus referred to as the neutral point on the scale. Scale values from 6 to 9 were to be checked to indicate varying degrees of satisfaction, with the highest response-value, 9, indicating the very greatest degree of satisfaction. Response-values of 4 and below similarly indicated varying degrees of dissatisfaction, with the lowest, 1, to be used for a serious condition affecting very adversely the respondent's effectiveness and morale.

Part III of the Questionnaire asked for reactions to 18 items of suggested innovations in University services, and for reactions to 10 suggested areas for uses to which any increased University income might be put. In the case of each item, the response-value scale from 1 to 9, again was used so that respondents might indicate the effect (negative, neutral, or positive) on their feeling of satisfaction at the University.

Part IV of the Questionnaire related to professional attitudes toward service at New York University, again using the 9-point scale for indicating positive, neutral, or negative attitudes toward the various areas of service that were listed. This section also asked for information concerning the scholarly activities of the faculty respondents and their connections with learned societies and professional organizations.

Part V of the Questionnaire related to the economic status of the faculty respondents. It included questions in such areas as housing, earnings of spouse, total income of self and spouse outside the University salary, and number of dependents.

Part VI related to attractions away from New York University. One set of questions asked for information about offers received from other institutions within the past three years. Inquiry was also made about the faculty member's attitude toward the encouragement of such offers. Respondents were asked to evaluate each of some 14 factors that might be present in an offer, with respect to the importance of the factor on the decision to leave or to remain at New York University. Request was made for the names of a few institutions to which the respondent would be attracted by an offer not involving a salary higher than that currently being received at New York University.

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* A copy of the Questionnaire may be obtained by addressing the Office of Institutional Research, New York University, New York 3, New York. The Questionnaire was set up in a form to simplify processing by punched card tabulation.

The 9-point Scale

The purpose of setting up the items of the Questionnaire for response by checking, usually on the 9-point scale, was to facilitate tabulation by the IBM process and also to simplify the answering of the items by respondents. Opportunity was also offered on each item for the respondent to write in any comment he cared to make.

The 9-point checking scale worked out very well. The respondents tended to distribute their reactions among all the possible response-values. On the average, 26.6 percent of those responding to the 88 items of Part II checked the neutral response-value of 5, indicating that the item did not affect one way or another their feelings of satisfaction or dissatisfaction at the University. The other responses in Part II were distributed fairly evenly among the remaining eight response-values in the scale, though the general trend of responses differed considerably from item to item.

One striking fact brought out in the tabulations is the extent to which the faculty respondents differed among themselves in their reactions to each of the items in the Questionnaire. On every item in Part II and also in almost all items in other Parts of the Questionnaire, the highest and lowest extremes on the response-value scale were always checked by some respondents. This was not a result of any tendency for just one or two eccentric respondents always to check a response-value of 9 or of 1 on every item. Indeed, the respondents seemed to be very conscientious and discriminating in assigning response-values to each item in accordance with their personal evaluation of its effect on their feeling of satisfaction or dissatisfaction.

The tendency for both the highest and lowest response-values to appear in the reactions to each item was true, not only for the entire group of 580 respondents but also for practically every category into which respondents were divided, for purposes of analysis on each of four classification items--academic rank, age, salary, and School or College within the University. In any category having a substantial number of respondents, say 40 or more, almost invariably the very highest and the very lowest possible response-values on the scale would appear among the reactions.

The tendency of faculty members to differ among themselves, to "think otherwise" as someone has put it, has often been noted. It was interesting to see how consistent the responses to the Questionnaire were in this respect, with the extremes as well as all the in-between values in the satisfaction-dissatisfaction scale being found on practically every item in the Questionnaire. This finding has important implications for administrative actions for it becomes clear that any decision that is made or course of action that is carried out is almost certain to meet widely differing reactions among faculty members.

Responses to Situations Affecting Satisfactions

In Part II of the Questionnaire the 88 items were divided into six major sections. Section A, relating to physical plant facilities, consisted of 21 items. The average response-value for the entire group of respondents for the 21 items on physical plant facilities was 4.8, slightly on the unfavorable side of the scale. Classrooms, laboratories, research rooms, faculty offices, and elevator services were generally scored rather low. The item rating highest in this group was bookstore facilities.

Section B of Part II consisted of six items related to personnel services (clerical assistance, graduate assistants, janitors, library staff). The average response-value for this group of items was 5.2, slightly above the neutral point of the scale. In general, ratings were low for the extent of clerical and graduate assistance but above the neutral point for the quality of such assistants. The library staff received a rather high rating, indicating that this is in general a source of considerable satisfaction to faculty members.

Section C of Part II consisted of 17 items related to faculty personnel policies and practices. The general trend of reactions on these items was slightly unfavorable, with an average response-value of 4.8. All the items in this section relating to faculty salaries received low ratings on the average. The "fringe benefit" provisions, however, such as retirement, life insurance, health insurance, tuition remissions, etc., received generally favorable reactions. The item, "funds for expenses of travel to professional meetings," was given a very low rating.

Section D of Part II consisted of 30 items related to "other administrative practices and policies." The response-values on this section averaged out to 5.0, exactly the neutral point on the scale. Items related strictly to academic administration in general had an average response-value on the "satisfaction" side of the scale. Participation by faculty members in various kinds of administrative decisions was in almost every case rated low, indicating some substantial extent of dissatisfaction arising from the present level of faculty participation. A general trend was observed for the responses to be more favorable to administrative policies and practices at the departmental and School or College level than at the all-University level.

Section E of Part II consisted of six items relating to faculty colleagues. Here the picture was one of rather general satisfaction; the average response-value was 6.3, the highest for any of the major sections of Part II. It is evident that for the average faculty member, his colleagues on the faculty are an important source of satisfaction in his service at New York University.

Section F, the final one in Part II of the Questionnaire, consisted of eight items related to the characteristics of students. The average response-value for the group of items in this section was 5.2, slightly on the favorable side of the satisfaction-dissatisfaction scale. The average response-value for "the previous preparation of your students" was only 4.7, a little below the neutral point on the scale. Average response-values well above the neutral point were given such items as "the seriousness of purpose of your students," "the general promise of the students in this University," and "the extent to which students are achieving in accordance with their abilities."

When the responses to the 88 items in Part II of the Questionnaire were analyzed in accordance with the Schools and Colleges of the University with which the respondents were affiliated, rather wide differences appeared in the average response-values for the various units of the University. Some of these differences served as a validation of the authenticity of the Questionnaire responses. For example, one School or College, that was most unsatisfactorily housed at the time the study was made, yielded a very low average response-value on the section related to physical plant; the condition was corrected shortly by the construction of an excellent new building. Other differences in average response-values for some of the Schools and Colleges, according to competent observers, reflected rather accurately the considerable differences that were then existing in the level of faculty morale in the various units of the University.

When respondents were classified according to academic ranks, the spread of average response-values was much less than when the classification was made according to School or College. In general, the lowest average response-values tended to come from the associate professors and the highest from the (full) professors, with instructors and assistant professors occupying an in-between position.

When the responses were analyzed according to the ages of respondents, only relatively small differences appeared in the average response-values for the various age-groups. In general, the older respondents tended to report somewhat higher levels of satisfaction than the younger, but the differences on most items were not large.

Analysis of the responses according to the University salaries of the respondents resulted in a wider spread of average response-values than in either of the classifications on the basis of academic rank or age. This was largely because of the tendency of those in the highest salary-brackets to report relatively higher levels of satisfaction than the total group of respondents. One could readily reach the general conclusion, on the basis of the statistical data, that one way to keep at least half the faculty in a state of satisfaction would be to make the minimum salary $10,000. Respondents in the highest salary-bracket, $15,000 and over, seldom reported any dissatisfaction with any condition whatever among the 88 items listed for response in Part II of the Questionnaire. In this group with the highest salaries, the responses to most items were enthusiastically on the "satisfaction" side of the scale.

Reactions to Suggested Innovations

Part III of the Questionnaire asked for reactions to a prepared list of suggested innovations in University services for faculty members. In the list were a number of suggested referral services to specialists on the University staff. The average response-values to all these were on the favorable side of the scale, with the highest average response-values being given to referral services on physical and mental health problems, legal matters, financial problems, and income-tax matters. Other forms of fringe benefits also generally drew responses on the favorable side of the scale, though for most of them the reaction was not particularly enthusiastic. The items drawing the highest average response-values were "tuition grants for children of faculty going elsewhere to college," and "University-owned rental housing near the campus."

A second section of Part III asked, "Under existing conditions at this University how could any given amount of increased income best be used to improve faculty satisfactions and morale?" A list of 10 items was presented for checking on the usual 9-point scale. All but one of the items received responses well on the favorable side of the scale. The item attracting the highest average response-value was "direct improvement in faculty salaries," with an average response-value of 8.3, extremely high on a 9-point scale. By contrast, the item "additional fringe benefits" rated much lower, with an average response value of 6.5, though still strongly on the favorable side of the scale. The item with the second highest average response-value, 7.1, was "improvement of facilities for research." Two others rating high were "improvements and renovations of the existing academic plant," and "improvement in the holdings and services of the University library." The one item that drew an average response-value on the negative side of the scale was "employment of a substantial number of additional faculty members."

Professional Attitudes

Part IV of the Questionnaire was concerned with professional attitudes and activities of the respondents. One section asked for reactions concerning the relative importance of nine different kinds of responsibilities for New York University. The usual 9-point scale was provided for indicating importance (values of 6 or above) or unimportance (values of 4 or below). High average response-values were reported for several of these categories of responsibilities. The very highest, with an average response-value of 8.3, was "the teaching of graduate students." Only slightly lower, average response-value of 8.1, was "the teaching of undergraduate students." A close third was "advancement of knowledge through research," with an average response-value of 8.0. Tied for the same response-value was "maintenance of conditions within the University that are comfortable and attractive for excellent scholars." Other items ranking lower, with their average-response values, are: "enhancement of the reputation of this University as a center for higher learning," 7.8; "maintenance of a scholarly atmosphere within this University," 7.6; "preservation of the cultural heritage," 6.8; "application of knowledge to life situations," 6.0; and finally, "the solution of problems of great national and international concern," 5.6.

Another section of Part IV presented a listing of groups to which a faculty member might have some feeling of obligation for effective service at the University. This was also to be answered on a 9-point scale, in terms of the importance or unimportance of each group in the faculty member's attitude toward his obligation for effective service at the University. The list of groups, with the average response-values for each, is as follows:

The students in the faculty member's classes...	8.5
One's colleagues on the faculty in his own department	7.5
Scholars throughout the world in the faculty member's special academic field	7.0
One's colleagues on the faculty throughout the entire University	6.3
Intellectuals in general in the United States and throughout the world	6.1
The administrative officers of the University	5.8
The Board of Trustees of the University	5.1
The alumni of the University	5.0

The analysis yields evidence that faculty members in general are oriented somewhat more strongly to their subject-matter disciplines than to the institution in which they serve.

Economic Status

Part V of the Questionnaire related to the economic status of faculty members. About 46 percent reported home ownership, and an equal number reported they live in a rented house or apartment. About one-third of the respondents reported some annual income of spouse from employment. The average annual income of self and spouse from sources other than the respondent's University salary was reported as $4,523, but 18 percent reported such outside income as zero. The average number of dependents was two; 20.8 percent reported no dependents. About 18 percent of the respondents reported one or more dependents attending college.

Attractions Away from the University

Part VI of the Questionnaire inquired about attractions that might take faculty members away from New York University. More than half the respondents (55.6%) reported they had had one or more offers of employment elsewhere within the three-year period prior to filling out the Questionnaire but had rejected such offers in order to remain at New York University. About 17 percent were considering an offer at the time the Questionnaire was returned or had already decided to accept an offer elsewhere. It is interesting to note that about one respondent in six was poised for flight. One-eighth of the respondents indicated that they were actively seeking opportunity for a position elsewhere, and about half of all respondents reported that they would welcome such an offer.

One section of Part VI presented a list of 14 factors to which the respondents were asked to react in terms of the importance of each factor in their evaluation of an offer that might come to attract them away from New York University. The usual 9-point scale was used for the evaluation, on which the scale-value of 5 represented a neutral reaction; the values above 5 represented positive attractions away from New York University, and those below 5 represented negative reactions to the factors. The list of factors, with the average response-value assigned each, is given below, in rank order of the average response-value.

The scholarly reputation of the institution making the offer	7.5
Substantially larger salary than that now being received	7.4
Opportunities for research	6.9
The extent of the normal teaching load	6.4
The kind of library facilities available	6.3
The kind of classroom, laboratory, and office facilities	6.2
The kind of housing available for the family	6.1
Fringe benefits, other than salary, retirement, etc.	5.7
Educational opportunities for children in the family	5.6
Opportunity to take on greater responsibilities and to render a greater service to society	5.3
Opportunity to be near relatives or other friends	4.0
Opportunity to live in a different part of the country	3.9
Opportunity to live in a different city or town	3.8

Opportunity to get out of university work and
into some non-academic organization..... 2.6

Again it may be pointed out that "fringe benefits" rated considerably below "larger salary" in the rank order list of factors that would attract faculty members to some other institution.

The final item of Part VI asked respondents to list the names of a few institutions of higher education to which they would be attracted by the offer of a salary only equal to or a little larger than that now received from New York University. Only 44.7 percent of the respondents mentioned any other institution in response to this question. Presumably the other 55.3 percent would not be attracted away from New York University unless the offer involved a larger salary than at present received. Many interesting observations can be drawn from the analysis of the responses when the respondents are classified in various ways. For example, those whose principal service at New York University was in research mentioned some other institution more frequently than those whose principal service was teaching or administration. The list of names of institutions and the frequency with which each was mentioned are very interesting and somewhat surprising. This list may be considered a reflection of New York University's place in the "pecking order" among institutions of higher education in the U.S.A., from the point of view of the University's own faculty members. The list affords those in the University who are responsible for academic administration some idea of the sources from which competition for capable staff members will be most difficult to meet.

The Detailed Report of the Study

This article presents only a much condensed summary of the Study of Faculty Satisfactions and Dissatisfactions at New York University. A more detailed analysis, providing upwards of 1,500 tables of data, has been prepared in typewritten form. Copies are on file in the Office of Institutional Research, New York University. The detailed report was prepared only for the use of the administration and faculty members of the University. Access to the detailed report is controlled by the Committee of the Elected Members of the Senate of the University, by whom the study was originally planned, and for whom it was made. A copy of the blank Questionnaire form may be obtained by an interested person on application to the Office of Institutional Research, New York University, New York 3, New York.

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PLANNING EDUCATIONAL FACILITIES

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THE PROBLEM of planning educational facilities is not merely one of obtaining "X" number of dollars to house "Y" number of students. Neither is it purely one of efficient utilization of space. It is a problem of envisioning, designing, and perfecting an environment for the students and faculty which will stimulate and perpetuate the learning process.

One has merely to look at industry to gain an insight into this approach. Industry's objective is to place its product in every home in the country. Industrialists begin by team-gathering and analyzing all the related data affecting the marketing of their product. They know, for example, the type of environment which will best house the product and most attractively present it to the public. They plan with intelligence and imagination the quality of enclosures which will enhance their product, perpetuate its use, and stimulate the curiosity of the uninformed.

If one wishes to better the purposes and ideals of higher education, the curricula must be presented and housed in such a manner that institutional objectives will be attained in an environment that will attract and stimulate youth and faculties in their search for knowledge.

In planning educational facilities in Wisconsin, an attempt is being made to study and correlate as much relevant data as possible. Three kinds of studies which have aided in the planning of educational facilities are the survey of physical facilities, facilities quality study, and the analysis sketch. These will be presented in that order.

The Physical Facilities Survey

The State Coordinating Committee for Higher Education published the first space utilization study based on the fall semester 1956-57 in April, 1958. The second study, based on the fall semester 1958-59, was published in April, 1960; a study is underway based on the fall semester 1961-62.

The utilization of space was studied for the following reasons: (1) to determine the present utilization of existing facilities, (2) to determine how utilization might be improved, (3) to pinpoint institutional strengths and weaknesses in building utilization, (4) to provide background data for future plant expansion based on need, (5) to provide information relative to space allocation standards, (6) to use the findings as a guide in the development of an integrated building priority list for the University of Wisconsin and the State Colleges, and (7) to continually keep abreast of the rapidly changing educational scene.

Pitfalls

The physical facilities survey must not be considered as the final answer to all problems confronting institutions of higher learning as they attempt to meet tidal wave enrollments, even so far as building needs are concerned. Such a study must be considered as a guide which, when correlated with other information, will give an objective approach to the solution of space problems. Some other items which must be considered along with the physical facilities data are the types of programs offered as well as those planned for the future, institutional objectives, scheduling, availability of funds, land access, past and present enrollment trends, projected enrollments, the availability and utilization of college teaching resources, and the quality of the space in terms of its intended educational purpose.

Institutions of higher education are often criticized for inefficient use of existing facilities. Studies have been quoted as to the utilization rate of instructional areas in colleges and universities. In many instances, terms and utilization figures have appeared without definitions. Data presented in such a manner may be misleading and are often useless. Without knowledge of the meaning or derivation of these figures it is extremely difficult, if not impossible, to make institutional comparisons. In addition, little mention is made of the necessity for examining all other relevant data.

Hard and fast standards of utilization and space requirements which may be applied to all institutions across the nation do not exist. The physical facilities of one institution cannot be compared with another without examining the curricula and institutional aims. An example of two different types of institutions would be to compare Wisconsin State Colleges at Stout and Eau Claire. Eau Claire State College primarily offers a liberal arts curricula, whereas Stout State College specializes in teacher education in the specific fields of Home Economics, Industrial Education, and Vocational Education.

Clearly, these institutions cannot be compared in terms of educational objectives. This, in itself, will affect the needs in terms of size and type of physical facilities required. In addition, a look at The University of Wisconsin indicates that, like any other university, it is composed of many different colleges each with specific aims and, in many instances, different requirements of physical facilities. Graduate programs require a large number of research rooms and seminar-type rooms. This is in direct contrast to the lower division of undergraduate students who may often be instructed in large general groups in a small number of rooms. It is evident that broad generalizations on utilization standards cannot be applied. The specific needs of the curricula offered at each institution must be considered in planning physical facilities.

Collecting Raw Data

Many researchers are trapped by use of terminology. Terms used to express space and its use may be commonplace to some but completely foreign to faculty and even more so to the lay person. It is very important that each term be clearly defined and understood by those gathering the raw data as well as by the audience to whom the final analysis will be presented.

The development of forms to gather raw data is a two-phase problem. Each form must be designed to attain certain predetermined objectives. In addition, clear and concise instruction sheets must be developed for completing each form. This is most important to ensure the comparability of the data to be gathered.

Two forms which were very useful in the Wisconsin Study are shown in Charts I and II; these are (1) Building Data Work Sheet, and (2) Summary of Assignable and Non-Assignable Area. These are the check reins which ensure the inclusion of every room in each building as well as specifying the function of each. In addition, a single-line drawing of each building adds to the accuracy of checking the reported data.

Presenting Analyzed Data

The analyzed data can and will be used for many purposes. Primarily, it will be scrutinized by two groups, (1) the managerial personnel of the institutions and (2) state or institutional governing bodies. The interests of each are quite opposite. Managerial personnel are interested in the infinite details of utilization. On the other hand, the governing bodies are interested in the broad picture as to how the facilities are used. This is particularly true when many institutions are involved in state-wide studies.

Today, administrators and governing boards are faced with an overwhelming avalanche of written material. It has become almost impossible for them to read and digest the reams of paper crossing their desks each day. Therefore, material must be summarized according to salient points. An "overview" provides one answer to this problem. In addition, the free use of graphic presentations greatly enhances the effectiveness of a study. Bar and pie graphs seem to be particularly effective as opposed to the tabular chart or the written word. One merely has to glance at the graphic presentations to gain an insight to the presented material.

It should be noted again that clear definitions of each area analyzed are vital. The definitions should be emphasized in the printing as eye-catchers which stand out from the main portion of the text.

Perhaps the most important thing to remember is to keep the presentations and terminology simple. If the audience receiving this data cannot readily interpret it, the study is a failure. Experience shows that the person who can not interpret the data immediately assumes that someone is "pulling the wool over his eyes." Once this attitude has been created, confidence and sympathy toward the problems are lost.

The Quality Study

Quantity and Quality of space are "Siamese Twins"--inseparable!

The Wisconsin State Colleges undertook a quality study for two reasons: (1) to determine the structural quality of existing buildings and (2) to determine the adequacy of these structures in terms of their educational use.

Certainly utilization rates and future needs are affected by the quality of space. A prime example is one institution's physical education and health facilities. Structural failures have caused low utilization of these areas. Even more important are the dangers of serious injury. How was this brought to the attention of governing bodies?

A room-by-room inspection was made of (1) materials, conditions, and equipment, (2) heating, ventilating, and plumbing, and (3) electrical equipment. This was developed into a published report and integrated with colored slides. The published report, like so many reports, was read by some but more often was passed over as so much literature. However, the presentation of colored slides, coupled with verbal explanations, brought about immediate action. This approach bridged the gap between the board room and the campus. The result was a Board of Regents action to curtail physical education until structural safety tests could be made which, in turn, proved the facilities unsafe. This school is now in the stage of preliminary plans for a new physical education facility.

The Analysis Sketch*

The analysis sketch provides a realistic approach to planning and eliminates so called "blue sky" estimating. An analysis sketch may be defined as an objective method of studying the first phase of an anticipated building project. It should be noted that the term "analysis sketch" refers to a study in the planning of educational needs and is not a drawing.

The analysis sketch is designed to provide (1) a realistic estimate of cost, (2) an accurate picture of the instructional program, (3) a graphic analysis of the developed program showing areas devoted to each function and their relationship to the total program, and (4) a graphic analysis of the building site and any pertinent information relative to the site development.

As indicated previously, it is very important that all terms be clearly defined and thoroughly understood by each person participating in the collection of the data in order to ensure the success of any study. This is further emphasized [illegible] the analysis sketch which may involve architects, engineers, faculty, governing boards, and, in many instances, members of various legislative bodies. In addition, clear-cut instructions and a standard format must be developed. This is particularly true when dealing with a large program such as a state-wide system, for several projects may be in process simultaneously. In this case, it will also be necessary to have a [illegible] coordinator to act as liaison between the agency and the participating architects. The analysis sketch brochure may be developed by using the following format:

1. The Program Statement. This is a statement developed by the architect and faculty working as a team. It includes a statement of the total planned instructional program and the justification of the need for the facility under study.

2. The Plot Plan. The plot plan is a graphic representation showing the location of the proposed building by a symbolic square.

3. Project Cost. This is an analysis of the total project cost.

4. Supplementary Information Concerning Project Cost. Under this heading are included the criteria for computing the various construction costs. In addition, information describing special site considerations such as pile foundations and their number and cost might be included. Further, the types and costs of special floors, walls, and other unusual areas should be included also. One of the most important items is a cost breakdown by department for general equipment. This will deal primarily with individual room requests made by the various departments involved.

5. The Graphic Analysis. The total developed program is analyzed graphically on a chart. Since the most commonly used paper size is 8-1/2"×11", this sheet must be made up of multiples of this size so as to allow this chart to become a fold-out page of the finished brochure.

6. Special Considerations. Included under this heading are items such as the following:

(a) Site consideration. Some considerations are criteria for site choice, soil test boring data, sewage problems, other utility information, and any special site development which may be necessary.

(b) Enrollments. The data should be shown by department and college for the past, present, and future. In addition, the method of obtaining the projected enrollment should be explained. For example, one method sometimes used is to take two-thirds of the past five years' average increase and project that forward five years. This is often considered quite conservative. A review of the published literature in this area will disclose the various methods which may be used in projecting enrollments.

(c) The analysis of room areas. This classification is a departmental breakdown of the total number of rooms and should include the estimated room sizes, number of student stations, the square feet per student station, and so forth. In addition, a layout is made of each proposed room indicating its dimensional size and showing the proposed installations. Also a list by rooms of the architectural, mechanical, and equipment specifications is arranged in tabular form and accompanies the layout.

7. Research. All the research done in the formulation of the project and its component parts is included in this category. The information should be infinitely complete, and all the sources of the data must be carefully described.

8. The Program. This section contains the program statement as developed by the faculty or agency involved. It includes any revisions made in the original program. From this final program statement, the computation of the cost estimate is made. Further, this section contains the names of the institution or agency members of the building committee and a project meeting memo for each meeting held during the development of the program. The meeting memo must be prepared by the architect and submitted to the project coordinator within three days after each meeting. In addition, it must be circulated to all people on the planning committee. This latter group is allowed five days to make any corrections or additions to the minutes. The meeting memo serves as a progress check on the facility being planned, which in turn is an aid to ensure the completion of the anal-

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* Frederick E. Schwehr, "Eliminate Guesswork from Planning," College and University Business, May, 1961

ysis sketch on or before the previously established completion date.

After completion of the format, data are bound into brochure-type folders. The analysis sketch is now complete and ready for submission to the examining groups for scrutiny and approval or rejection. Upon acceptance of the analysis sketch, the next phase is the development of budget preliminaries.

The inclusion of photographs greatly enhances the value of the analysis sketch. Photographs depict the quality of the existing structures and illustrate the overcrowded conditions as they may exist.

By now the reader probably is aware of the application of the analysis sketch to almost any anticipated building project. Special definitions and instructions will be needed for different kinds of buildings.

Conclusion

Effective planning of education facilities must be a team effort.

A typical higher educational planning team in Wisconsin is composed of faculty from the college concerned, an administrator from the college, a coordinator from the State Architect's office, a representative from the Board's planning and construction department, and the appointed architect.

Incidentally, this is an excellent opportunity for the administrator to "kill two birds with one stone." In the planning of the program the faculty will have an opportunity to restudy the curricula, examine its purposes and bring into sharper focus the various concepts of instruction. Thus, the docile faculty is awakened.

One of the important steps in determining the extent of future needs is to examine the quality of the existing facilities. This should not be limited to the assessment of so much brick and mortar but rather as the appropriateness of the facilities for the type of instruction now and that planned for the future. It appears this is an area where more research is needed. Understanding is needed of the differences in the quality of learning as influenced by varying physical plant environments.

Better facilities evolve when equal planning time is devoted to meeting the educational needs and the architectural design.

A "good client" must have a thorough knowledge of the educational needs justified by infinite study of the proposed program and all relevant data. In addition, it is most important to have an architect blessed with creative ability and initiative.

Perhaps the most important factor is to have a team composed of openminded individuals with a willingness to work and rework the various schemes so that the end result will be an environment which will stimulate and perpetuate higher education.

CHART 1

BUILDING DATA WORK SHEET*

Building ____

Gross Sq. Ft. ____________________ Net Sq. Ft. ____________________

Assignable Floor Space ____________________ Cubage ____________________

Room No.	Length and Width	Sq. Ft. of Floor Area	Code

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* Frederick E. Schwehr, "A Survey of Physical Facilities at Wisconsin State Colleges and the University of Wisconsin, Fall, 1958," (Madison: Coordinating Committee for Higher Education, Joint Staff Study XXXIII, Part I and Part II, April 1960).

CHART II

SUMMARY OF ASSIGNABLE AND NON-ASSIGNABLE AREA[2]

____
(Name of Institution)

Name of Building					Assignable Floor Space in Square Feet														Non-Assignable Space			
					Active Instructional						Active Non-Instructional							Inactive Areas				
Room Number	Department	Square Ft. of Floor Space	No. Student Stations	Student Occup.	Classroom	Teaching Laboratory	Office	Library	Auditorium	Other Instructional	Research	Extension & Public Service	Physical Education	Laboratory School	Auxiliary Enterprises	Physical Plant	Other Active Non-Instr.	Under Const. or Remodeling	Circulatory	Rest Rooms	Custodial Service	Non-Usable

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[2] Frederick E. Schwehr, "A Survey of Physical Facilities at Wisconsin State Colleges and The University of Wisconsin, Fall, 1958," (Madison: Coordinating Committee for Higher Education, Joint Staff Study XXXIII, Part I and Part II, April 1960).

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SINGLE UNDERGRADUATE STUDENT COSTS AND INCOME, THE UNIVERSITY OF WISCONSIN*

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The University of Wisconsin

A VERY HIGH proportion of research about students is directed toward studying levels of ability or degrees of achievement. It is also important to know something about general student characteristics, costs of college attendance, and parental backgrounds.

This study attempts to bring together information on selected student and parent characteristics, but the study deals primarily with the gathering and analyses of data concerning student and parent incomes and student costs of university attendance. Although the data are for students at The University of Wisconsin, Madison campus, and therefore should prove helpful to prospective students in anticipating costs and possible sources of income at that institution, the study also should provide a basis for comparative studies of students in other institutions.

General Procedure

Only persons were included in the study who were full-time students, who were in attendance both semesters of the 1960-61 academic year, and who were living away from their parental homes. The report is based upon a sample of about one person in every eleven of the defined population.

A questionnaire was sent to the students; over 86 percent returned usable responses. The data on parental incomes were obtained from a questionnaire sent to the parents of students who did not have foreign home addresses; 74.7 percent of the parents submitted income data.

Student Costs

The average (mean) cost of university attendance was $1,485 for students who were residents of the state of Wisconsin. Men spent $1,463 and women spent $1,530. In comparison, 10 years ago, according to the Goodnight-Trump** study, men spent $1,120, and women spent $1,150 (Table I).

From 1950-51 to 1960-61, the average cost of board and room for Wisconsin men increased by 19.5 percent and for Wisconsin women increased by 26.4 percent. If it were assumed that 1961-62 costs would reflect the $50 increase in residence halls board and room rates between 1960-61 and 1961-62, the increase from 1950-51 to 1961-62 would be 27.7 percent for men and 34.2 percent for women.

Resident fees, however, have been increased at a faster rate than board and room charges. The increase in fees from 1950-51 to 1960-61 was 83.3 percent ($120-$220) and from 1950-51 to 1961-62 was 96.7 percent ($120-$236).

Women spend considerably more for board and room and clothing than men do but less for recreation and entertainment. The average costs for books and supplies is about the same.

Non-resident men and women spend more than resident men and women spend (Table II and Chart I). The average cost, in 1960-61, for non-resident men was $2,142, for resident men was $1,463; for non-resident women was $2,409, and for resident women was $1,530. Most of the differences in the means of the amount spent by resident and non-resident students are attributable to the $380 tuition charge and the larger amounts spent by non-resident students for board and room, travel to and from home, clothing, and personal items and gifts. The tuition charge is in addition to fees paid by both resident and non-resident students. From 1960-61 to 1961-62, tuition was raised from $380 to $489 and fees were raised from $220 to $236 for the academic year.

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* The data of this summary are taken primarily from: L. J. Lins, Student Expenses and Sources of Income, 1960-61 Academic Year, The University of Wisconsin, Madison Campus, Office of Institutional Studies, October 1961, pp. xi + 112.

** Scott Goodnight and Paul Trump, "Student Expenses and Financial Resources at The University of Wisconsin," Division of Student Affairs, University of Wisconsin, 1953.

Board and Room

The differences are negligible, from class to class, in the average amount spent for board and room by single undergraduate men. The average cost of board and room for single undergraduate women, however, decreases from class to class (freshman to senior); this amount is higher for women than for men in all classes. New freshman women can expect to have difficulty in locating low cost accommodations and might expect to pay more for board and room than would be necessary to pay as upperclassmen.

It is possible to have accommodations for board and room at less than $500 for the academic year. However, students who are new to the campus, particularly the women, should plan to spend at least $750 to $950 for board and room. Sixty-two percent of the fresnman women paid less than $900 for board and room, and nine percent paid less than $750.

Ninety percent of the resident women spent between $510 and $1,226, a difference of $716, r board and room while 90 percent of the non-resident women spent between $517 and $1,425, a difference of $908. The same trend follows for resident and non-resident men; however, the average costs are less and the ranges are smaller.

In referring to Table III and Chart II, one notes that the highest average expenditure for board and room was by women students living in privately owned halls. The mean cost for these women was $1,164 with half of the students paying $1,252 or more, and 90 percent paying between $623 and $1,435. The fact that the mean cost in privately owned halls for women is over $267 higher than for any other living accommodation for women explains partly the high total expenditure for university attendance of non-resident women since 48.1 percent of the women students from the North Central states other than Wisconsin, 59.1 percent of the women students from the New England and Middle Atlantic states, and 38.4 percent of the women students from other states and foreign countries lived in privately owned halls.

The sample group indicates a shift from University residence halls to other types of housing after the freshman year. Whereas 63.7 percent of the freshman men and 52.0 percent of the freshman women lived in University residence halls, only 29.6 percent of the sophomore men and 44.8 percent of the sophomore women lived in University residence halls. Of the seniors, only 9.4 percent of the men and 23.9 percent of the women lived in University residence halls.

Student Income

The mean income for university attendance of single undergraduate students who were residents of the state and who were living away from their parental homes was $1,619. Although no student would have a distribution of income exactly like a distribution based upon means, the distribution is useful in obtaining a general picture of income sources. The average incomes from various sources of resident students were scholarships $82, employment during the year $154, summer employment $398, savings $169, loans $74, family contribution $660, and other income including ROTC and military reserves $82.

Family Contribution

Of their total incomes, resident men received 31.7 percent, resident women received 57.3 percent, non-resident men received 58.4 percent, and non-resident women received 80.5 percent from family contributions. Financial assistance from families is more prevalent among non-residen than among resident students; 92 percent of the male and 98 percent of the female non-resident students received some financial assistance from their families as compared with 76 percent for male and 87 percent for female resident students.

The average (mean) amounts of assistance for students receiving financial help from their families were resident men $665, resident women $1,099, non-resident men $1,482, and non-resident women $2,031. There was a wide variation, however, in the amount of assistance; for example, 90 percent of the resident men having financial help from their parents received between $96 and $1,692.

Scholarships

Of the undergraduate students in the sample, 16.6 percent of the resident men, 21.4 percent of the resident women, 16.8 percent of the non-resident men, and 5.2 percent of the non-resident women held scholarships. There were large differences in the values of the scholarships for all groups; for example, the values of 90 percent of the scholarships held by resident women were between $126 and $948.

Summer Employment and Savings

Over 69 percent of the students were employed during the summer; 74.2 percent of the men and 62.6 percent of the women were employed. Seventy-seven percent of the resident men and 70 percent of the resident women were employed during the summer.

Of the students working during the summer, 50 percent of the resident men saved over $580 for university expenses. The amounts saved from summer employment by 50 percent of the non-resident men, resident women, and non-resident women were as much as, or more than, $532, $327, and $344 respectively.

Over one-third (37.5%) had savings from sources other than summer employment. The mean savings of these persons was over $415.

Loans

Of the resident students, 6.4 percent had loans from the University, 6.8 percent had loans from relatives, and 5.0 percent had loans from other sources. At the time of the survey, 16 percent of the undergraduate students were in debt; 23.9 percent of the resident men had debts. Ninety percent of the resident men with debts had debts of between $137 and $2,360.

University Payroll and Other Work During the Academic Year

Nearly 18 percent (17.6%) of the undergraduate students worked for the University; 22.3 percent had work outside of the University. Of the resident students, 45.7 percent of the men and 42.2 percent of the women worked; of the non-resident students, 34.7 percent of the men and 20.9 percent of the women worked.

As students progress from one class to the next, apparently not only a higher proportion work but also the average number of hours worked per week increases. A higher percentage of the men than of the women in each class worked. Of the freshmen, 27.4 percent of the men and 19.2 percent of the women worked; of the sophomores, 40.9 percent of the men and 36.5 percent of the women worked; of the juniors, 47.5 percent of the men and 43.1 percent of the women worked; and of the seniors, 61.5 percent of the men and 52.2 percent of the women worked. Fifty percent of the working freshmen worked 8.5 or more hours per week as compared with 50 percent of the working seniors who worked 12.5 or more hours per week.

Half of the students who worked earned $1.06 or more per hour; half of the freshmen earned $1.00 or more per hour and half of the seniors earned $1.12 or more per hour. The average (mean) pay per hour was $.99 for freshmen and $1.38 for seniors; ninety percent of the working freshmen earned between $.59 and $1.22, and ninety percent of the seniors earned between $.90 and $3.29 per hour.

There were no great differences between the number of credits carried by working and non-working students when divided by class. The average credits carried by persons working 11 - 15 hours a week was as large as, or larger than, the average number of credits carried by students not working or working fewer hours.

Income, Occupations, and Education of Parents

Income of Parents

The average income of parents of non-resident students is higher than of parents of resident students. The percents of the parents earning $15,000 or more during 1960, divided according to the resident status of the student, were as follows: resident men, 10.7 percent; resident women, 15.3 percent; non-resident men, 38.6 percent; and non-resident women, 60.4 percent (Table IV).

Over 35 percent of the parents of resident male undergraduates earned less than $6,000 during 1960 as compared with 22.2 percent of the parents of resident female undergraduates, 11.4 percent of the parents of non-resident male undergraduates, and 3.5 percent of the parents of non-resident female undergraduates.

Occupations of Parents

Assuming that the distribution of occupations of all Wisconsin men has not changed greatly since 1950, it appears that a considerably higher proportion of the fathers of Madison campus undergraduate students is employed in professional and semi-professional and managerial and official occupations than is true of all men in the state (Table V) and that a much lower proportion of the fathers of students is in the agricultural and the skilled, semi-skilled, and unskilled occupations than is true of the total men in the state. A higher proportion of the fathers of non-resident students, in the sample, was in professional and semi-professional and managerial and official jobs than was true of the fathers of resident students in the sample.

Nearly one-third of the mothers of undergraduate students were working outside the home, that is, in occupations other than housewife. A slightly higher proportion of the mothers of non-resident students was in professional, semi-professional, and managerial and official positions than was the case of the mothers of resident students; the percentages of mothers in these occupations were resident men, 10.2 percent; resident women, 17.2 percent; non-resident men, 16.9 percent; and non-resident women, 15.2 percent.

Education of Parents

Many of the parents of undergraduate students did not attend college (Tables VI and VII). Of the fathers of resident men, 57.2 percent did not attend college and 24.5 percent had only an eighth grade education; only 27.0 percent received a baccalaureate or higher degree. Nearly 35 percent of the fathers of resident women had earned the baccalaureate degree whereas half of the fathers of non-resident students had been granted the baccalaureate degree.

A higher percentage of the mothers than of the fathers of undergraduate students completed a high school education; however, a higher percentage of the fathers than of the mothers earned a baccalaureate or higher degree. The percentages of parents with a baccalaureate or higher degree, divided by residency and sex of the students, are as follows: male residents (mothers 17.2, fathers 27.0), female residents (mothers 23.5, fathers 34.9), male non-residents (mothers 32.7, fathers 50.0), and female non-residents (mothers 32.3, fathers 49.9).

It appears that parents who do not have a college education are more concerned that a college education be provided for their sons than for their daughters. The fact that a higher percentage of the parents of non-resident students than of resident students are college graduates is to be expected since the cost of university attendance is higher for non-resident than for resident students and since education and income are positively associated.

The average (mean) incomes of the parents of students according to the level of fathers' educations were as follows: below eighth grade, $6,523; eighth grade, $7,578; high school but no diploma, $8,081; high school diploma, $9,393; college but no degree, $12,119; baccalaureate degree, $14,605; master's, law, or equivalent degree, $19,196; and doctor's degree, $22,994. All of the income distributions are skewed to the higher incomes as shown in Table VIII. One notes that the means are higher than the medians and that there is a wide range within which 90 percent of the cases fall (fifth to ninety-fifth percentiles).

TABLE I

CHANGES IN RESIDENT SINGLE UNDERGRADUATE STUDENT COSTS MADISON CAMPUS, 1950-51 AND 1960-61

Cost Item	Men				Women			
	1960-61		1950-51		1960-61		1950-51	
	Amount	%	Amount	%	Amount	%	Amount	%
Room and Board	$ 729.20	49.9	$ 610	54.5	$ 809.01	52.9	$ 640	55.7
Books and Supplies	87.07	6.0	50	4.5	83.14	5.4	50	4.3
Travel	52.20	3.5	45	4.0	30.59	2.0	40	3.5
Clothing	76.13	5.2	70	6.2	151.04	9.9	160	13.9
Recreation and Entertainment	128.53	8.8	140	12.5	43.88	2.9	55	4.8
Other*	169.47	11.6	85	7.6	192.02	12.5	85	7.4
Fees	220.00	15.0	120	10.7	220.00	14.4	120	10.4
TOTAL	$1462.60	100.0	$1120	100.0	$1529.68	100.0	$1150	100.0

TABLE II

SINGLE UNDERGRADUATE STUDENT COSTS DIVIDED BY RESIDENT STATUS MADISON CAMPUS, 1960-61

Cost Item	Men				Women			
	Res.		Non-Res.		Res.		Non-Res.	
	Amount	%	Amount	%	Amount	%	Amount	%
Room and Board	$ 729.20	49.9	$ 802.67	37.5	$ 809.01	52.9	$1007.16	41.8
Books and Supplies	87.07	6.0	87.65	4.1	83.14	5.4	87.54	3.6
Travel	52.20	3.5	151.19	7.1	30.59	2.0	173.78	7.2
Clothing	76.13	5.2	105.77	4.9	151.04	9.9	228.69	9.5
Recreation and Entertainment	128.53	8.8	163.84	7.6	43.88	2.9	56.55	2.4
Other*	169.47	11.6	230.39	10.8	192.02	12.5	255.38	10.6
Fees and Tuition	220.00	15.0	600.00	28.0	220.00	14.4	600.00	24.9
TOTAL	$1462.60	100.0	$2141.51	100.0	$1529.68	100.0	$2409.10	100.0

*Laundry and cleaning; health; fraternity, sorority, and residence halls dues; student activities; personal items; gifts, etc.

TABLE III

COST FOR ROOM AND BOARD OF SINGLE UNDERGRADUATE STUDENTS DIVIDED BY SEX AND TYPE OF HOUSING*

Measure	University Res. Hall	Univ. Apt. or House	Sorority or Frat. House	Lodg. House Univ. Club YMCA	Privately Owned Apt.	Privately Owned Hall	Room in Private Home	Light Housekeep. Room
	Men							
	Type of Housing							
Mean	$779.03	$683.75	$807.09	$679.78	$741.35	$718.75	$695.78	$674.06
Median	780.90	660.00	810.00	675.00	694.00	750.00	655.71	640.00
5th %ile	708.33	332.00	577.00	483.00	481.50	--	463.00	416.00
95th %ile	845.25	870.00	1005.00	892.50	1085.50	--	1071.25	1010.00
No. of Cases	154	12	74	23	89	4	83	16
	Women							
Mean	$808.36	$737.41	$896.88	$826.67	$625.71	$1164.26	$760.00	$503.33
Median	811.92	670.00	881.25	825.00	580.00	1251.85	775.00	530.00
5th %ile	752.34	473.50	757.50	--	434.00	623.00	--	--
95th %ile	849.33	1182.50	1042.50	--	1015.00	1434.69	--	--
No. of Cases	143	27	32	3	14	89	9	3

*Does not include nine men and one woman living in rented houses or five men and five women living with relatives.

TABLE IV

INCOME OF PARENTS OF SINGLE UNDERGRADUATE STUDENTS ACCORDING TO SEX AND RESIDENCE STATUS OF STUDENT

Parental Income	Men				Women			
	Res.		Non-Res.		Res.		Non-Res.	
	No.	%	No.	%	No.	%	No.	%
Under $6,000	103	35.4	8	11.4	32	22.2	3	3.5
$ 6,000 - $ 9,999	118	40.5	18	25.7	47	32.6	11	12.8
$10,000 - $14,999	39	13.4	17	24.3	43	29.9	20	23.3
$15,000 - $19,999	9	3.1	11	15.7	10	7.0	18	20.9
$20,000 - and over	22	7.6	16	22.9	12	8.3	34	39.5
TOTAL	291	100.0	70	100.0	144	100.0	86	100.0

TABLE V

PERCENT OF FATHERS, OF SINGLE UNDERGRADUATE STUDENTS, BY OCCUPATION

Father's Occupation	Fathers of Students				Wis. Men 1950 Census
	Residents		Non-Residents		
	Men	Women	Men	Women	
	%	%	%	%	%
Professional, Semi-Prof., Managerial, Official	37.5	51.5	72.2	76.8	15.8
Clerical, Sales, Service	13.9	16.2	13.8	9.7	16.3
Agricultural	13.3	11.5	4.0	0.8	21.8
Skilled, Semi-Skilled, Unskilled	27.2	14.0	6.0	6.8	46.1
Unknown, Retired	8.1	6.8	4.0	5.9	--
TOTAL	100.0	100.0	100.0	100.0	100.0

TABLE VI

EDUCATION OF FATHERS OF SINGLE UNDERGRADUATE STUDENTS

Educational Level of Father	Residents		Non-Residents	
	Men	Women	Men	Women
	Acc. %	Acc. %	Acc. %	Acc. %
Below 8th Grade	7.3	3.2	3.0	0.8
8th Grade	24.5	16.9	5.0	3.8
High School - No Diploma	34.0	27.0	14.0	11.3
High School Diploma	57.2	47.1	32.0	24.0
College - No Degree	73.0	65.1	50.0	50.1
Bachelor's Degree	87.7	80.4	74.0	68.0
Master's, Law, and Equiv.	95.9	91.0	86.0	81.4
Doctor's (PhD., M.D.)	100.0	100.0	100.0	100.0

TABLE VII

EDUCATION OF MOTHERS OF SINGLE UNDERGRADUATE STUDENTS

Educational Level of Mother	Residents		Non-Residents	
	Men	Women	Men	Women
	Acc.%	Acc.%	Acc.%	Acc.%
Below 8th Grade	3.0	2.1	2.0	--
8th Grade	17.8	8.4	3.0	2.3
High School - No Diploma	26.8	15.2	11.2	9.8
High School Diploma	62.3	48.7	46.9	36.9
College - No Degree	82.8	76.5	67.3	67.7
Bachelor's Degree	98.1	97.4	87.7	88.7
Master's, Law, and Equiv.	100.0	100.0	100.0	97.7
Doctor's (PhD., M.D.)	--	--	--	100.0

TABLE VIII

1960 INCOME OF PARENTS OF UNDERGRADUATE STUDENTS ACCORDING TO FATHER'S EDUCATION*

Measure	Total	Father's Education							
		Below Eighth Grade	Eighth Grade	High Sch. but not Diploma	High Sch. Diploma	College but not Degree	Bach-elor's Degree	Master's, Law or Equiv. Degree	Doctor's (PhD, MD, DDM, etc.) Degree
Mean	$12,333	$ 6,523	$ 7,578	$ 8,081	$ 9,393	$12,119	$14,605	$19,196	$22,994
Median	9,000	5,350	5,800	6,800	7,100	9,550	11,150	14,000	18,000
5th %ile	3,000	1,000	1,600	3,000	2,800	5,000	4,800	7,200	6,100
95th %ile	35,000	20,000	15,000	15,000	25,000	25,000	35,000	42,000	62,000
No. of Cases	572	26	73	62	112	102	92	56	49
Percent	100.0	4.5	12.8	10.8	19.6	17.8	16.1	9.8	8.6

*Does not include 44 fathers whose occupations are unknown or who are retired or deceased.

CHART I

SINGLE UNDERGRADUATE STUDENT MEAN COSTS DIVIDED BY RESIDENT STATUS
MADISON CAMPUS, 1960-61

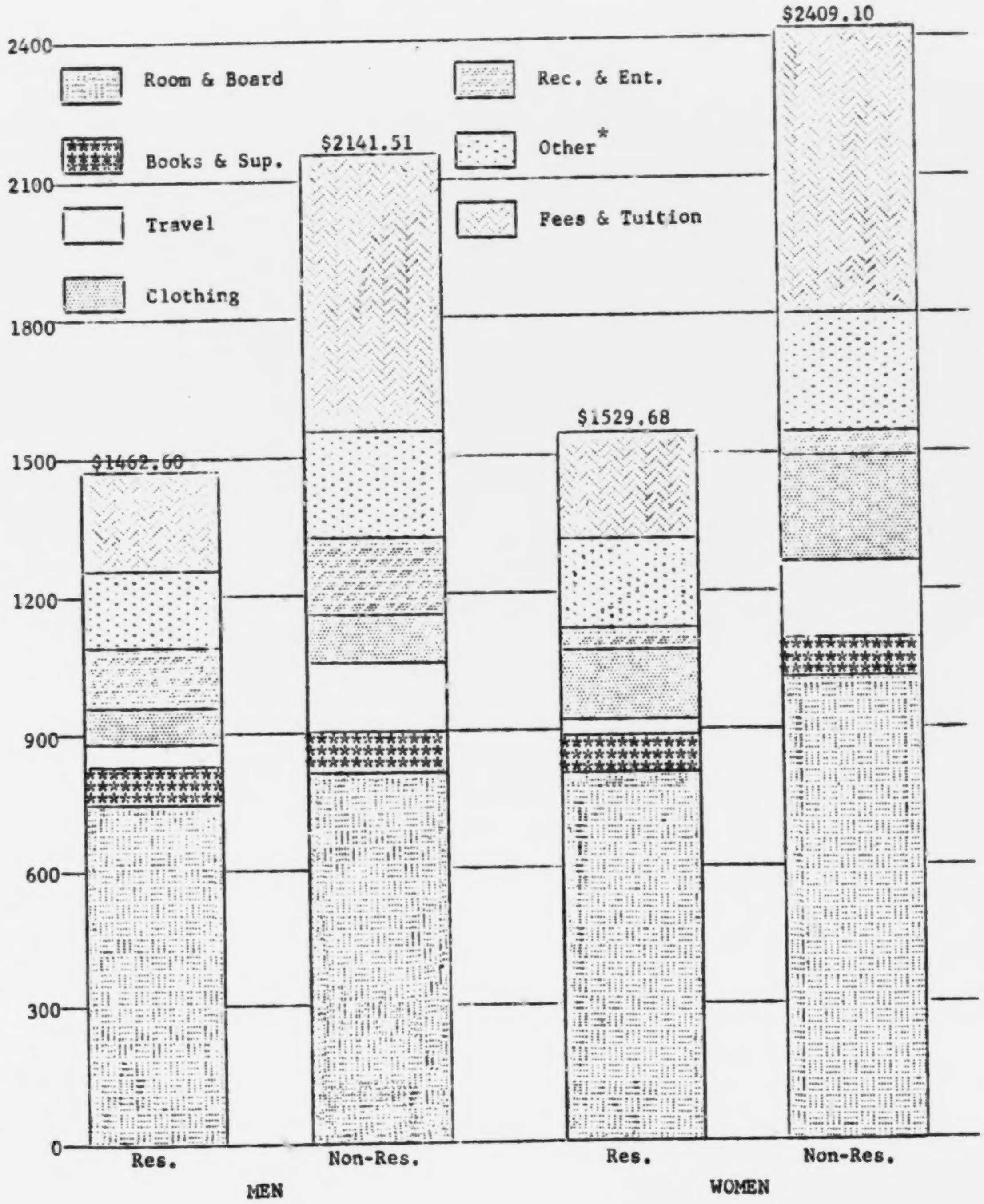
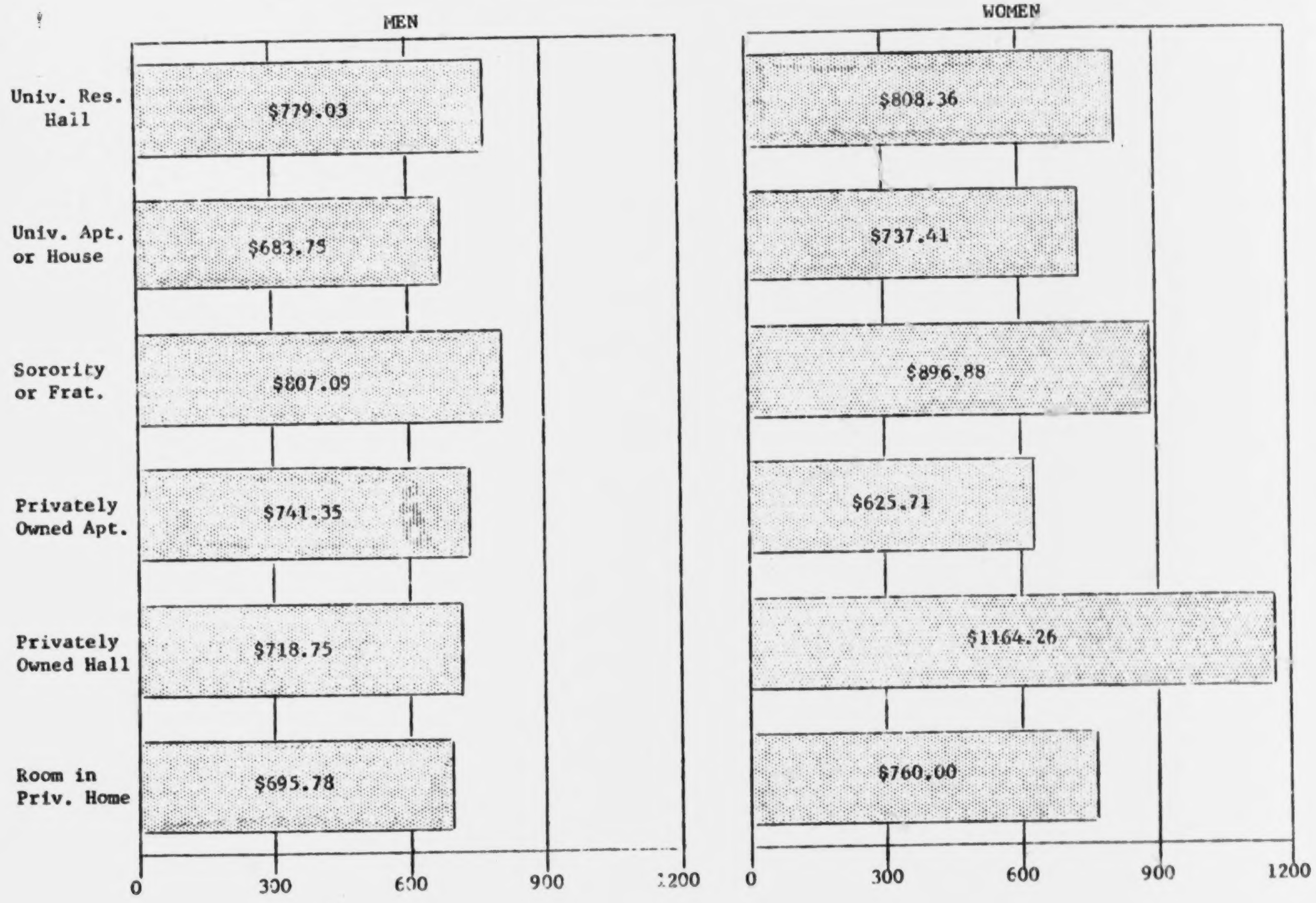


CHART II

MEAN COST OF ROOM AND BOARD OF SINGLE UNDERGRADUATE STUDENTS, MADISON CAMPUS, 1960-61



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APPLICATION FEES AND ROOM DEPOSITS IN SELECTED COLLEGES AND UNIVERSITIES

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Introduction

COLLEGE AND university admissions officers are confronted daily with an avalanche of inquiries from prospective students. At the March 1962 Conference on Institutional Research in Higher Education held at Northern Illinois University, one of the panelists made the observation that the admissions officer of his university would receive this year approximately 7000 inquiries from prospective students, that about 3500 students would make application for admission, that some 2200 would be accepted, but that only 1500 would actually attend the institution. This case appears to be representative of the situation which prevails in many admissions offices.

The "impending tidal wave of students" about which Ronald B. Thompson of Ohio State University wrote a few years ago is a very present reality, and prospects are for continued increases in both applications and enrollments. Students, in their desire to insure admission to a college, are in increasing numbers making multiple applications. It is not uncommon for an admissions officer to receive a mimeographed letter requesting application forms. In order to reduce the number of insincere and frivolous applications many colleges and universities require either a non-refundable application fee or an application deposit.

Purpose and Scope of the Study

The purpose of this study was to determine the extent to which state colleges and universities require a non-refundable application fee and/or a room deposit. A secondary purpose, though equally important, was to determine the range of such fees and deposits and whether or not the institutions involved were convinced that such fees and deposits accomplish intended ends.

In order to secure information from representative and primary sources, the major state university and at least one senior college in each of 49 states were requested to complete a questionnaire.* Of the 127 institutions invited to participate in the study, 117 responded.

The responses were divided into three major groups: 1) colleges and universities requiring a non-refundable application fee of all students, 2) institutions not requiring a non-refundable application fee of all students, 3) those which require some type of admission fee and/or deposit but do not require a non-refundable application fee of all students.

The Application Fee

Table I reveals the application fee and application deposit structure of the 117 colleges and universities participating in this study.

Fifteen, 23.0 percent, of the colleges and universities not requiring a non-refundable application fee or an application deposit indicated that they expect to add a non-refundable fee during the next five years. Thirty-seven, 56.9 percent, stated that they do not expect to require such a fee during the same period, while 13, 20.0 percent, reported that the matter is under active consideration. These data indicate that within five years a majority of colleges and universities will require either a non-refundable application fee or an application deposit.

Table II reports the fees charged by the institutions requiring a non-refundable application fee. The application fees assessed by most institutions are nominal and should not pose too serious a financial problem for the serious applicant.

Table III reveals the reasons given by institutions for requiring a non-refundable application fee. Twenty-five institutions indicated that the non-refundable application fee was successful in achieving its intended results. Five stated that the fee was not successful, and three failed to indicate any reaction. Of those indicating that the fee did not achieve its intended purpose, it is interesting to note that three said so because they had indicated that the fee was added to defray the cost of processing applications; two of these stated that the fee should be higher in order to take care of the costs involved, and one indicated that the state did not permit the college to retain the fee.

In general, therefore, it may be concluded that the majority of colleges and universities utilizing

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*Institutions of higher learning in the State of West Virginia were not invited to participate in this study since the impetus for the study came from expected recommendations in this state. A copy of the questionnaire used in this study is contained in Appendix A.

TABLE I

THE EXTENT TO WHICH INSTITUTIONS OF HIGHER LEARNING REQUIRE A NON-REFUNDABLE APPLICATION FEE OR AN APPLICATION DEPOSIT

Designation of Fee or Deposit	Number	Percent
Colleges and universities requiring a non-refundable application fee of all students	33	28.2
Colleges and universities not requiring a non-refundable application fee	65	55.5
Colleges and universities requiring an application fee but which made refunds under certain circumstances	6	5.1
Colleges and universities requiring a deposit with each application	4	3.4
Colleges and universities requiring a non-refundable application fee of out-of-state students only	6	5.1
University requiring an application fee to be paid at the time of initial enrollment	1	0.9
University requiring an application fee from transfer students only	1	0.9
University requiring an application fee of graduate students only	1	0.9
TOTAL	117	100.0

TABLE II

APPLICATION FEE CHARGES BY 33 INSTITUTIONS OF HIGHER LEARNING

Amount of the Fee	Number Charging the Fee	Percent
$ 5.00	17	51.6
10.00	13	39.3
20.00	2	6.1
25.00	1	3.0

a non-refundable application fee are convinced that the fee serves its intended purpose.

The Room Deposit

The majority of the institutions participating in the study reported that they require a room deposit. Table IV reports the general structure of room deposits in the 109 institutions requiring such a deposit according to whether or not an admissions fee or deposit is required. The room deposits required by most institutions of higher learning are rather small although many colleges require a much more substantial room deposit than an application fee.

TABLE III

REASONS GIVEN BY 33 COLLEGES FOR REQUIRING A NON-REFUNDABLE APPLICATION FEE

Reasons	Number of Institutions
Assist in the cost of processing applications	24
The fee causes a student to show a more "serious intent" in filing an application	16
Reduce the number of multiple applications	10
Discourage the unqualified from making application	2
Makes for early applications	1
Discourages "frivolous" applications	1
Stabilizes applications	1
State policy	1
To make the application more official	1
College able to make more accurate enrollment projections	1
Curtail "insurance" applications	1

Summary and Conclusions

Since college and university enrollments shall continue to increase during the coming decade and since many qualified students will find it increasingly difficult to gain admission to a college or university, multiple applications will probably cause unprecedented concern to college and university admissions officers. The data reported in this study seem to warrant the following general conclusions:

1) The majority of colleges and universities will find it necessary to require a non-refundable application fee in order to defray some of the

TABLE IV

ROOM DEPOSITS IN 109 INSTITUTIONS OF HIGHER LEARNING

Amount of Deposit	Institutions Requiring Some Type of Admissions Fee or Deposit	Institutions Not Requiring a Non-refundable Application Fee	Institutions Requiring a Non-refundable Application Fee	Total
$ 5.00	1	5	1	7
8.00	--	1	--	1
10.00	4	10	8	22
15.00	2	4	1	7
20.00	--	5	2	7
25.00	2	23	11	36
30.00	1	1	--	2
32.00	--	1	--	1
35.00	3	--	--	3
36.00	--	1	--	1
40.00	1	--	2	3
43.00	--	1	--	1
50.00	1	3	2	6
75.00	--	1	--	1
87.00	1	--	--	1
90.00	--	1	--	1
100.00	--	--	1	1
119.50	--	1	--	1
155.00	--	1	--	1
½ all fees	--	1	--	1
$25. women, $5. men	--	1	--	1
$25. women, $10. men	--	1	--	1
$75. women, $25. men	--	1	--	1
Total fees for one semester	1	--	--	1
Amount not given	1	--	--	1
No deposit required	1	2	5	8
TOTAL	19	65	33	117

costs involved in processing applications and to reduce to a reasonable minimum the number of multiple applications.

2) In addition to a non-refundable application fee, a substantial deposit required of the student after acceptance should serve to assist colleges and universities in admitting students for whom they can provide educational opportunities.

3) Room deposits should be more substantial so as to insure the student's serious intent to attend the university.

APPENDIX A

CONCORD COLLEGE

Athens, West Virginia

1. Name of instituion________________________________

2. Name of individual completing form________________________

Position____________________________________

3. Enrollment, Fall 1961-62________________________

4. Do you require a non-refundable application fee?____________
Yes or No

If yes, please indicate the amount of the fee____________

5. Indicate reasons why you have such a fee and the major benefits derived therefrom:

(1)____

(2)____

(3)____

(4)____

(5)____

6. Are you convinced that the application fee has served its intended purpose?________________Comments____________________
Yes or No

____

7. If you do not have a non-refundable application fee, do you contemplate requiring one during the next five years?________________
Yes or No

8. Do you require a room deposit?______________If yes, amount______
Yes or No

9. Under what circumstances is the fee forfeited?__________________

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WOMEN AND HIGHER EDUCATION: WITH SPECIAL REFERENCE TO THE UNIVERSITY OF WISCONSIN*

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The University of Wisconsin

SOME INTERESTING FACTS CONCERNING WOMEN

1. The average American woman lives six to seven years longer than the average American man.
2. She marries younger than she did 30 to 40 years ago, and therefore has a longer portion of her life span to devote to a career.
3. The average age today of the American woman entering her first marriage is approximately 20 years—the lowest for women of the Western World in this category.
4. A generation ago nearly one-half of our college women graduates were childless at the end of their child-bearing period; but today the college women graduates show increasing fertility rates. They reproduce earlier, and they have closer spacing between the children.
5. The average woman needs approximately 15 to 20 years to raise her family.
6. On the average, she has 25 to 35 years following her child-bearing period to devote to duties other than those of the home.
7. The average age of the working woman in 1920 was 28 years; today it is 40 years. It is estimated that by 1970 one out of every three workers in the United States will be a woman.
8. Today many women who are working are occupied "at jobs that are considerably below their intellectual capacities."
9. There is great need today for more career planning for young women in college.
10. In the field of higher education, it is frequently stated that "the doors are open for women, but no one thought it important that they enter the promised land."

The Circumstances for American Women as Related to Higher Education

According to figures from the U. S. Bureau of the Census, the total number of women of all ages in the U. S. A. in 1960 exceeded the number of men by more than two-and-one-half million (2,660,000). These figures exclude persons abroad. In the near future the excess of women over men will probably reach 3,000,000 or more. In spite of the great increase in the number of women as compared with men and the removal of many of the factors that retarded college entrance, the number of women students continuing their education for higher degrees has failed to show an increase comparable to that of the men. Many of our most talented women never complete the work for higher degrees.

Among those women who do undertake higher degrees, another tendency should also be noted: the women, more than men, choose non-scientific fields of study. Figures from the U. S. Office of Education indicate that the percentage of women receiving advanced degrees in science is low. In many cases, women interested in science have not been encouraged to go on in this field. Their advisers and teachers in high schools and colleges have discouraged them—this, in spite of the fact that women in the field of scientific research have special value. They often possess inquiring minds, imagination, and logical thinking for precise description and measurement and for critical analysis of facts and theories.

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*The University of Wisconsin tables included in this report were obtained from the University of Wisconsin Coordinator of Institutional Studies, the Secretary of the Faculty, the Controller, and the Registrar. For the time and trouble these individuals have taken to supply these facts, the author wishes to express his sincere thanks.

A report from the National Science Foundation[1]* on science doctorates of 1958 and 1959 combined, furnishes additional support for the statement that higher degrees are awarded predominantly to men. The NSF data are in accord with what might be expected: 91 percent of the degrees in the life sciences are granted to men; 82 percent in the behavioral sciences; and 97 percent in the physical sciences—an overall 93 percent of higher degrees in science going to men.

The figures for the number of Ph. D. degrees awarded to men as opposed to women in certain fields in the United States are given below:

Field	Men	Women
Mathematics	240	15
Physics	473	9
Biology (General)	118	29
Chemistry	960	49
Total	1791	102

The participation of women in professional occupations in the Soviet Union is totally different from that in the United States. According to Nicholas DeWitt,[2] women represent a very sizable component of the Russian professional work force. Approximately 53 percent of the Russian women are working in the various fields. The following rounded figures are given for female participation in five important work classifications:

Occupation	Approx. Percent
Physicians	75
Teachers	75
Economists and statisticians	60
Agronomists and veterinarians	39
Lawyers	32

Quite apart from the great number of women in Russia in the various professional fields, DeWitt also calls attention to the high quality of the educational program in Russia.[3]

Dr. Hoke S. Greene[4] of the University of Cincinnati calls attention to the seriousness of the American situation with the following comment: "Women scientists may determine whether the United States is to maintain scientific supremacy in the space and nuclear age."

Dean Eunice C. Roberts[5] of Indiana University, at a conference on womanpower, stated, "... there is great opportunity for imaginative and daring thought in the area of women's education and employment." She concluded, quoting the late Dag Hammarskjold's judgment, "... of all the developments of the past century none may be so significant and in the long run so beneficial as the emancipation of women."

Why Should Women Be Educated?

The argument for the education of able young women was stated as follows by Sir David Smith[6] in an address to the Senate of the University of New Zealand in 1961:

> ... Universities should, I think, try to increase greatly the contribution which educated women can make to the intellectual life of the country. We should have far more qualified women on the staffs of our Universities and far more women teachers, particularly of mathematics and of science, in our post-primary schools. Somehow, it seems to me, the attitude of society needs to be changed so that able women are free at some stage in their lives, notwithstanding marriage, to engage in the deeply satisfying intellectual life of which they are capable and from which our society can derive so much benefit.

In a much lighter vein, Margaret Habein cites Daniel Defoe who, as early as 1697, gave these motives for the education of women:[7] "Women, he said, should be educated. And why? Because they then become more pleasing to men! Want of an education, said Defoe, makes a woman 'turbulent, clamorous, noisy, nasty, the devil.' On the other hand, an educated woman is all softness and sweetness, full of peace, love, wit, and delight."

T. H. Huxley (1825-95) (see H. Cyril Bibby)[8] stated:

> ... So far from imposing artificial restrictions upon the acquirement of knowledge by women, throw every facility in their way.... Let us have "sweet girl graduates" by all means. They will be none the less sweet for a little wisdom; and the "golden hair" will not curl less gracefully outside the head by reason of there being brains within.

Sir David Smith's argument[9] for the higher education of young women fits best the temper of contemporary times: "... so that able women are free at some stage in their lives, notwithstanding marriage, to engage in the deeply satisfying intellectual life of which they are capable and from which our society can derive so much benefit."

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*Footnotes will be found at end of article.

In this paper, no attempt is made to review the extensive literature dealing with the education of women or to describe the many changes that have taken place in this area in recent years.[10] Without laboring such evolution it is apparent that the time has arrived when American women should carry the responsibilities for developing their minds and utilizing their intellectual capacity.

But it seems in the United States that the best use is not made of the brightest and most intellectual women. Supported by the results of numerous studies, this fact is clear.

"In this complicated and competitive world, there is no asset greater than the brain power of our people," Secretary of Health, Education and Welfare Abraham Ribicoff[11] declared recently. The desperate need for more of this vital asset is well known to all who are interested in our way of life. In spite of that need, we are utilizing only approximately one-half of our total fund of brains. Where then shall we turn? Why not, for one goal, turn to the more effective use of our wasted womanpower—the so-called "feminine fallout"?

The responsibility for better use of this great human resource lies not alone with the educator and with persons who can be instrumental in providing opportunities for women. It lies with the women themselves who must be convinced that the seeking of new goals in education will bear new satisfactions and strengths.

Dr. Ruth Hill Useem[12] of Michigan State University, declares, "Never have American women lived so long and yet been so little concerned with preparing themselves for that lengthened life. Never have we been so in need of mature, secure women and never have we had girls and women feel less secure of themselves."

In addition to this long life, women have great responsibilities to be educated whether they will be career women outside the home or homemakers and mothers. Studies have shown that on the average fathers, especially fathers of pre-school children, spend less than ten minutes per day with their children. The mother, therefore, is left alone to rely on her own resources to be both mother and father to her children and, it probably could be added, to seek her own diversions both for entertainment and intellectual stimulation while her husband is busy with business, professional, or civic activities. "That is why...that not even if a woman is to be married and have children but especially if she marries and has children, graduate education is a decided advantage."[13] Yet regardless of this and of the many other evidences of benefits resulting from education, many American women neglect their educational opportunities. Esther Raushenbush,[14] director of the Sarah Lawrence College program for the continuing education of women, writes as follows: "A great many able girls simply do not take their college education with the seriousness that corresponds to their intelligence...." She then recommends that "Positive action should be taken by colleges, especially women's colleges, in population centers, to aid the woman who did not finish her work for an A. B. degree but later in life wants to finish it... Special courses designed for such students, and agreements should be made..."

It seems clearly established that today women do not have to choose between marriage and a career for a happy and productive life but may combine both if the social climate is made favorable. True, the career may be limited or even abandoned during the child-bearing period, but at the close of that period, it may be expanded, provided that intellectual interests have been maintained or awakened and provided that the necessary education has been acquired or is still possible to gain.

Warren Weaver,[15] Vice President of the Alfred P. Sloan Foundation, has urged, "... as the pressure for able personnel increases, we simply must create new and appropriate opportunities for women."

A happy and productive life was the point of emphasis presented by Mary I. Bunting, President of Radcliffe College, in a discussion of the Radcliffe Institute for Independent Study. Established in November 1960, the Institute was created to help highly qualified women to carry on scholarly or creative projects. A complement to orthodox higher education is provided through various programs fashioned to suit the pattern of women's lives. Two of these programs are intended primarily for married women with family commitments.

Special Programs for the Continuing Education of Women

Recognition of a need that exists today in higher education has prompted a number of colleges and universities to provide special programs for the continuing education of women. Among these pioneering undertakings, the following should be mentioned:

1. The Radcliffe Institute for Independent Study.
2. The University of Minnesota Plan for the Continuing Education of Women.
3. The Ford Foundation Program for the Re-Training in Mathematics of College Graduate Women, Rutgers University.
4. The Sarah Lawrence College—Center for Continuing Education of Women.
5. The Michigan State University Program for Women.
6. Columbia University—the Barnard College Plan for Special Students.
7. The American Association of University Women Graduate Program of Continuing Education for Women.

These special curricula focus attention on ways that make it possible for the alumnae to resume academic work and, in many cases, for the more mature woman to complete her work for an advanced degree. For example, at Columbia University, a Barnard College alumna who has completed one year of graduate study may attend classes without paying fees.

Turner Catledge,[16] managing editor of the New York Times, writing on the responsibility to provide higher adult education in the light of modern demands, declares, "If the girls have quite a time getting educated in the first place, it is even more unforgivable that much of their education is later on permitted to grow obsolete while they are busy bringing up a family. And that's exactly where the universities' new commitment to adult education comes in—or should. Here, after all, are the institutions that ought to make it their business that a young woman who has majored in science or mathematics or history or psychology can remain up-to-date instead of becoming academically obsolescent."

The Situation for Women at the University of Wisconsin

The main objective of this report is to show what has taken place in the education of women at the University of Wisconsin during the last 20 to 40 years. Examined in the light of the preceding pages, which suggest the national picture for women, the facts bear increasing force.

For almost 100 years women have been admitted to the University of Wisconsin although they have not always been as welcome as they are today. Historians Merle Curti and Vernon Carstensen[17] state that women were first admitted to the University of Wisconsin in 1863. They state that at that time, according to James L. High, who had witnessed the coming of women, they were greeted with numerous and often bitter expressions of hostility from the men. High commented, "They came like an army with banners, conquering and to conquer; they came with bewitching curls and dimpled cheeks, and flowing robes, and all the panoply of feminine adornment; and worst of all, they came to stay."

A further reflection of early attitudes toward women in intellectual pursuits is found in John W. Hoyt's comments concerning the early days of the Wisconsin Academy of Sciences, Arts and Letters:[18] "At the preliminary meeting (of the Academy) from one-fourth to one-third of the audience consisted of women as listeners. The reason, I suppose, for this absolute silence on their part was that in Wisconsin the antagonism to women's suffrage, as a political and social measure, was at its height. Women sometimes have extraordinary common sense, expressed in extraordinary ways and this was one such occasion."

The discussion following and the tables included will demonstrate that though women "came to stay" on the Wisconsin campus, their stay still had limitations.

Comparison of Enrollment Totals for Men in Undergraduate Studies and in Graduate School with Totals for Women

Tables I and II present data in relation to the total undergraduate and graduate school enrollment of men and women for the years 1921-22 to 1960-61 inclusive. Both tables are organized to give five-year averages and not only include the numbers of men and of women but also, in the case of the women, show the percentage of the total enrollment. All of the enrollment statistics, regardless of various factors that have exerted an effect on the enrollment from year to year, are included. There has been an increase in the enrollment of both women and men; however, the proportion of women as compared with men has not shown any well defined change in the undergraduate studies and has evidenced a small decrease in the Graduate School during the 39-year period.

The variable changes in the proportion of women in the undergraduate enrollment and the decrease in the proportion of women in graduate studies may be due to a single factor or a combination of factors.

Finances—Several studies have indicated that lack of funds is a factor; it appears that when it is necessary to choose between higher education for the boy and for the girl in a family, the decision is usually made in favor of the son. When there are no funds for college, regardless of sex, the outcome is the same: waste of potential talent.

Counseling—Frequently it is failure of the parents and teachers to give young college women the essential facts required for their guidance. Many women have not been informed that the chief responsibilities in bearing children usually represent less than 15 to 20 years in a woman's life. Many do not know that the average girl graduating from college may work outside of her home for approximately 25 years or more. The desirability of gaining the most from higher education comes into focus when these facts are realized.

Marriage—Early marriage is a definite factor. Figures for 27 states show that 50.5 percent of American women marry for the first time before they are 20 years old.[19] It is within this same span that the undergraduate studies are usually undertaken and carried forward. The feeling that a college education is of little value in fitting women for the responsibilities of the home plays an important role in a girl's decision to terminate her higher education or never to begin it. How much in error these decisions are can be clearly shown by statements made by Dr. Useem and previously referred to in this paper. Moreover, although there

TABLE I

COMPARISON OF AVERAGE NUMBER OF MEN AND WOMEN, AND PERCENTAGE OF WOMEN IN ALL UNDERGRADUATE SCHOOLS AND COLLEGES UNIVERSITY OF WISCONSIN, MADISON CAMPUS*

(Average of Five-Year Periods, First Semesters 1921-22 - 1960-61)

	Average of Five-Year Interval			
Five-Year Interval	Total	Men	Women	% Women
1956-57 - 1960-61	12,734	8,190	4,544	35.7
1951-52 - 1955-56	10,479	6,809	3,670	35.0
1946-47 - 1950-51	14,440	10,383	4,057	28.1
1941-42 - 1945-46**	7,093	3,333	3,760	53.0
1936-37 - 1940-41	9,110	5,941	3,169	34.8
1931-32 - 1935-36	6,554	4,096	2,458	37.5
1926-27 - 1930-31	7,488	4,434	3,054	40.8
1921-22 - 1925-26	6,454	3,839	2,615	40.5

* Includes special students.

**Enrollment decrease due to World War II.

TABLE II

COMPARISON OF AVERAGE NUMBER OF MEN AND WOMEN, AND PERCENTAGE OF WOMEN IN THE GRADUATE SCHOOL, UNIVERSITY OF WISCONSIN MADISON CAMPUS*

(Average of Five-Year Periods, First Semesters 1921-22 - 1960-61)

	Average of Five-Year Interval			
Five-Year Interval	Total	Men	Women	% Women
1956-57 - 1960-61	3,393	2,754	639	18.8
1951-52 - 1955-56	2,678	2,220	458	17.1
1946-47 - 1950-51	2,524	2,032	492	19.5
1941-42 - 1945-46**	761	516	245	32.2
1936-37 - 1940-41	1,214	954	260	21.4
1931-32 - 1935-36	1,002	720	282	28.1
1926-27 - 1930-31	944	651	293	31.0
1921-22 - 1925-26	694	489	205	29.5

* Includes graduate students taking their work on the Milwaukee campus through 1955-56.

**Enrollment decrease due to World War II.

has been inconclusive evidence, higher educational attainment appears to be correlated to greater marriage stability.[20]

Comparison of Enrollments in Law and Medicine and of the Numbers of Ph. D. Degrees Granted for Men and for Women

The same time period and the same methods of comparison are used in the statistics offered here on enrollments and higher degrees as have been described previously for the total undergraduate and graduate school enrollments. The five-year average figures are presented in Tables III and IV. Here again, the men and women follow a familiar pattern: the total law and medical school enrollments and the total number of Ph. D.'s granted have increased, but the percentage of the Ph. D. degrees granted to women has actually decreased as has the percentage of women in law and medicine (see also the report by John B. Parrish[21]).

There is a small decrease in the percentage for women as compared with the percentage for men. The Wisconsin findings are in agreement with reports from other colleges and universities.

Home Economics Enrollment

Since the students in Home Economics are almost 100 percent women, no attempt has been made to separate the figures for men and women.

The total enrollment of undergraduate and of graduate students, as well as the overall total of Home Economics students at the University of Wisconsin, is shown in Table V. Although the figures do not go back as far in years as noted in Tables I to IV, they do give the records for 14 years.

The undergraduate enrollment in the field of Home Economics shows a decrease in the total number of women in this school and an increase in total number of graduate students. Somewhat similar figures are reported in other colleges and universities throughout the United States (see the report of Paul A. Miller[22]).

School of Education: Comparison of Number of Men with Number of Women, and the Ratio of Women to Total Enrollment

The figures for the School of Education enrollment from the years 1931-32 to 1960-61 inclusive for five-year averages are given in Table VI. In September 1951, the elementary school teaching curriculum was started at the University of Wisconsin. There was an increase in the proportion of women to men from 1946-47 to the present. For graduate students, the proportion of women during the past 15 years was less than in the five-year period 1931-32 - 1935-36; the recent proportion of women among the undergraduate group is greater than it was in 1931-32 - 1935-36. In spite of the increase in the number of women in graduate work, the proportion of women to men failed to show any increase.

College of Letters and Science: Comparison of Number of Men with Number of Women, and the Ratio of Women to Total Enrollment

At the University of Wisconsin, the College of Letters and Science has a much larger enrollment than any other school or college of the University; in fact, more than two-thirds of all the teaching in the University is carried out in this college. The figures for the total enrollment in Letters and Science and the division according to sex are presented in Tables VII and VIII.

The record extends from 1930-31 to 1961-62 inclusive and shows that the proportion of women to men in the undergraduate enrollment has changed little during the 31-year period. With the exception of the war period, the proportion of undergraduate women to men was about 40 percent. The figures for the graduate students are different (see Table VII). According to the five-year averages, the proportion of women to men has decreased.

Number of Men and Women on University of Wisconsin Faculty

From the statistics presented in Tables I to VIII, it appears that there may not be maximum use of our intellectual women. The great progress in the development of new equipment, designed to reduce labor in the home and thus provide women with more free time, has not resulted in an increase in the percentage of women going on for the higher degrees as compared with the number of men so doing; and it has not brought about a marked gain in the proportion of highly educated women as compared with men. Neither has early marriage accompanied by early retirement from child bearing apparently created an environment for increased education of women. It would be reasonable to assume that in the long run these releases would bring more and more women to an active part in college careers. But what effect have these recent changes in the estate of women had on the percentage of women on the Wisconsin faculty? The answer is given in the figures of Table IX for the years 1941-42 to 1960-61 inclusive, a 20-year period.

If the average percentage figures for the four five-year intervals are examined, it will be noted that there is a small decrease in the proportion of women on the faculty—from 23. 6 percent in the first period of the 20-year span to 20. 4 percent.

Instead of presenting statistics for all schools and colleges at all campuses of the University, the figures for the large basic college, the College of Letters and Science of the Madison campus, are examined next. As organized at the University of

TABLE III

COMPARISON OF AVERAGE NUMBER OF MEN AND WOMEN, AND PERCENTAGE OF WOMEN RECEIVING DOCTOR OF PHILOSOPHY DEGREES, UNIVERSITY OF WISCONSIN, MADISON CAMPUS

(Average of Five-Year Periods, Academic Years 1921-22 - 1960-61)

	Average of Five-Year Interval			
Five-Year Interval	Total	Men	Women	% Women
1956-57 - 1960-61	359	328	31	8.6
1951-52 - 1955-56	362	331	31	8.6
1946-47 - 1950-51	236	215	21	8.9
1941-42 - 1945-46*	104	91	13	12.5
1936-37 - 1940-41	155	141	14	9.0
1931-32 - 1935-36	125	108	17	13.6
1926-27 - 1930-31	111	99	12	10.8
1921-22 - 1925-26	69	62	7	10.1

*Enrollment decrease due to World War II.

TABLE IV

COMPARISON OF AVERAGE NUMBER OF MEN AND WOMEN, AND PERCENTAGE OF WOMEN IN THE LAW AND MEDICAL SCHOOLS, UNIVERSITY OF WISCONSIN MADISON CAMPUS

(Average of Five-Year Periods, First Semesters 1921-22 - 1960-61)

	Average of Five-Year Interval			
Five-Year Interval	Total	Men	Women	% Women
1956-57 - 1960-61	809	777	32	4.0
1951-52 - 1955-56	849	812	37	4.4
1946-47 - 1950-51	910	854	56	6.2
1941-42 - 1945-46*	363	328	35	9.6
1936-37 - 1940-41	686	655	31	4.5
1931-32 - 1935-36	662	627	35	5.3
1926-27 - 1930-31	582	546	36	6.2
1921-22 - 1925-26	401	376	25	6.2

*Enrollment decrease due to World War II.

TABLE V

HOME ECONOMICS ENROLLMENT AT THE UNIVERSITY OF WISCONSIN, MADISON CAMPUS RATIO TO TOTAL ENROLLMENT—FIRST SEMESTER

	Total			Undergraduates			Graduates		
	University	Home Economics		Total University	Home Economics		Total University	Home Economics	
Year	No.	No.	%	No.	No.	%	No.	No.	%
1961-62	20,118	532	2.6	14,936	469	3.1	4,396	63	1.4
1960-61	18,811	536	2.8	13,965	476	3.4	4,046	60	1.5
1959-60	17,433	534	3.1	12,932	474	3.7	3,701	60	1.6
1958-59	16,590	513	3.1	12,311	461	3.7	3,431	52	1.5
1957-58	15,929	535	3.4	12,154	495	4.1	2,990	40	1.3
1956-57	16,099	553	3.4	12,306	504	4.1	2,977	49	1.6
1955-56	15,134	543	3.6	11,649	505	4.3	2,668	38	1.4
1954-55	13,954	562	4.0	10,576	533	5.0	2,583	29	1.1
1953-54	13,346	593	4.4	10,011	562	5.6	2,525	31	1.2
1952-53	13,571	619	4.6	10,018	589	5.9	2,701	30	1.1
1951-52	14,020	670	4.8	10,139	639	6.3	2,911	31	1.1
1950-51	15,766	632	4.0	11,648	596	5.1	3,126	36	1.2
1949-50	17,690	623	3.5	13,843	601	4.3	2,822	22	0.8
1948-49	18,623	597	3.2	15,175	572	3.8	2,568	25	1.0
1947-48	18,693	624	3.3	15,658	599	3.8	2,154	25	1.2
1940-41	11,376	681	6.0	9,488	656	6.9	1,248	25	2.0

TABLE VI

COMPARISON OF AVERAGE NUMBER OF MEN AND WOMEN, AND PERCENTAGE OF WOMEN SCHOOL OF EDUCATION

(Average of Five-Year Periods, First Semesters 1931-32 - 1960-61)

	Average of Five-Year Interval							
	Undergraduates				Graduates			
Five-Year Interval	Total	Men	Women	% Women	Total	Men	Women	% Women
1956-57 - 1960-61	1,141	295	846	74.1	366	230	136	37.2
1951-52 - 1955-56	1,030	317	713	69.2	230	145	85	37.0
1946-47 - 1950-51	1,219	551	668	54.8	226	155	71	31.4
1941-42 - 1945-46*	609	121	488	80.1	87	44	43	49.4
1936-37 - 1940-41	727	248	479	65.9	124	83	41	33.1
1931-32 - 1935-36	633	207	426	67.3	92	53	39	42.4

*Enrollment decrease due to World War II.

TABLE VII

COMPARISON OF AVERAGE NUMBER OF MEN AND WOMEN, AND PERCENTAGE OF WOMEN COLLEGE OF LETTERS AND SCIENCE

(Average of Five-Year Periods, First Semesters 1931-32 - 1960-61)

	Average of Five-Year Interval							
	Undergraduates				Graduates			
Five-Year Interval	Total	Men	Women	% Women	Total	Men	Women	% Women
1956-57 - 1960-61	6,473	3,700	2,773	42.8	1,881	1,490	391	20.8
1951-52 - 1955-56	5,691	3,384	2,307	40.5	1,428	1,141	287	20.1
1946-47 - 1950-51	7,992	5,319	2,673	33.4	1,534	1,190	344	22.4
1941-42 - 1945-46*	4,319	1,701	2,618	60.6	450	292	158	35.1
1936-37 - 1940-41	5,702	3,600	2,102	36.9	814	625	189	23.2
1931-32 - 1935-36	4,298	2,608	1,690	39.3	664	459	205	30.9

*Enrollment decrease due to World War II.

TABLE VIII

COMPARISON OF TOTAL NUMBER OF MEN AND WOMEN IN THE COLLEGE OF LETTERS AND SCIENCE—FIRST SEMESTER*

Year	Undergraduates				Graduates			
	Total	Men	Women	% Women	Total	Men	Women	% Women
1961-62	8,962	4,996	3,966	44.3	2,616	2,023	593	22.7
1960-61	7,897	4,383	3,514	44.5	2,336	1,843	493	21.1
1959-60	6,912	3,827	3,085	44.6	2,080	1,637	443	21.3
1958-59	6,116	3,523	2,593	42.4	1,839	1,465	374	20.3
1957-58	5,622	3,246	2,376	42.3	1,640	1,302	338	20.6
1956-57	5,820	3,523	2,297	39.5	1,512	1,205	307	20.3
1955-56	6,006	3,564	2,442	40.7	1,360	1,082	278	20.4
1954-55	5,760	3,399	2,361	40.9	1,296	1,007	289	22.3
1953-54	5,535	3,200	2,335	42.2	1,359	1,091	268	19.7
1952-53	5,530	3,311	2,219	40.1	1,469	1,186	283	19.3
1951-52	5,624	3,445	2,179	38.7	1,655	1,337	318	19.2
1950-51	6,361	4,086	2,275	35.8	1,828	1,478	350	19.1
1949-50	7,453	5,049	2,404	32.3	1,710	1,368	342	20.0
1948-49	8,174	5,557	2,617	32.0	1,577	1,206	371	23.5
1947-48	8,657	5,795	2,862	33.1	1,360	1,025	335	24.6
1946-47	9,315	6,107	3,208	34.4	1,197	875	322	26.9
1945-46	4,953	1,374	3,579	72.3	536	298	238	44.4
1944-45	3,759	801	2,958	78.7	306	149	157	51.3
1943-44	2,974	721	2,253	75.8	308	179	129	41.9
1942-43	4,654	2,529	2,125	45.7	419	292	127	30.3
1941-42	5,256	3,081	2,175	41.4	680	542	138	20.3
1940-41	5,760	3,560	2,200	38.2	815	650	165	20.2
1939-40	5,710	3,580	2,130	37.3	823	642	181	22.0
1938-39	5,850	3,724	2,126	36.3	859	657	202	23.5
1937-38	5,815	3,738	2,077	35.7	780	594	186	23.8
1936-37	5,373	3,398	1,975	36.8	793	580	213	26.9
1935-36	4,942	3,118	1,824	36.9	654	472	182	27.8
1934-35	4,321	2,714	1,607	37.2	583	403	180	30.9
1933-34	3,818	2,266	1,552	40.6	562	395	167	29.7
1932-33	3,918	2,329	1,589	40.6	721	487	234	32.5
1931-32	4,489	2,613	1,876	41.8	800	539	261	32.6
1930-31	5,317	3,019	2,298	43.2	787	536	251	31.9

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*Graduate students taking their work at the Milwaukee Extension Center during 1955-56 and prior years are included. Graduate students taking their work at the University of Wisconsin-Milwaukee for the years 1956-57 and succeeding years are excluded. Includes nursing for 1955-56 and prior years; pharmacy for 1949-50 and prior years; and commerce for 1944-45 and prior years.

Wisconsin, this college provides approximately 68 percent of all of the instruction at the University. The numbers of men in the ranks of professors and instructors as contrasted with the numbers of women are shown in Tables X, XI, and XII, for a period of seven years from 1954-55 to 1960-61. (In all three of these tables the administrative officers and the non-teaching members of the staff have been omitted.) The number of women in the lower ranks, assistant professors and instructors, show a slight increase (Table X) while the number of women in higher ranks show a slight decrease. The percentage figures for both groups are small.

Table XI gives the figures for the two groups (men and women) in the higher ranks (professors and associate professors) from 1954-55 to 1960-61 inclusive. In 1954, women represented 5.4 percent of the professors and associate professors, and in 1960-61 the women on the faculty represented 5.0 percent of the total faculty in these ranks, a slight drop in the percentage of women. However, this 5.0 percent in 1960-61 is higher than the percentages of all years intervening between 1954-55 and 1960-61.

Perhaps it is noteworthy at this point to say that according to a report from the Woodrow Wilson Foundation,[23] "...the proportion of women on liberal arts college faculties is about 14 percent..." At The University of Wisconsin in the College of Letters and Science the proportion is less than 10 percent.

A recent report by John B. Parrish[24] is of special interest. Parrish carried out a study of the status of women on faculties engaged in top level teaching and research. Of the 18 institutions included in his report, he found that women represented approximately seven to 10 percent of the faculty. The percentage figures were much higher in the case of instructors and assistant professors. As a result of his study, he concluded, "Failure of women to advance up the academic ladder appears rather striking in view of their substantial contributions at lower rank levels."

Comparison of Major Fields of Interest of Men and Women—Social Sciences, Humanities, and Natural Sciences

In order to obtain some idea of the variation in fields of interest of the men and women students at Wisconsin, 40 of the top ranking men students and 40 of the top ranking women students receiving the Bachelor's degrees for 1960-61, as shown by high grade-point averages for their four years in college, were selected and their major fields recorded:

	Men	Women
1. Humanities	8	20
2. Social Sciences	8	14
3. Natural Sciences	24	6

The results as summarized bring out strikingly the great differences between men and women students as related to the three major divisions of studies. The major numbers of top ranking men are interested in the natural sciences; and the ratio of men to women in this field is four to one. The women, on the other hand, are primarily interested in the humanities and the social sciences. Perhaps the sample for this test is too small to be of great accuracy, but at least it gives an indication of the differences in the fields of interest of these two high grade-point groups divided by sex.

Summary

The plain facts concerning enrollment of women at The University of Wisconsin are these:

The proportion of women to men in the total enrollment figures for the undergraduate schools, with the exception of home economics, has shown little change for 31 years. The figures for the women are 33.3 percent for 1960 and 34.4 percent for 1961. They are somewhat lower than the percentage of women in the total U. S. enrollment figures for full- and part-time students. According to the U. S. Office of Education, women made up 37 percent of the 1960 enrollment at institutions of higher learning and 37.7 percent in 1961.

The figures for Wisconsin's Graduate School point more sharply to a wasted resource: the proportion of women going on for the Ph. D., as compared with men seeking the Ph. D., has decreased. The case might be stated this way: among people who have the ability to pursue college studies, men show a higher proportion in college enrollment, and this is especially true in enrollment in graduate studies.

These questions are worthy of repeating again: Why is there so much unused brain power among women—those who never go to college, or who, if they do go, drop out? (The drop-out rate for women is greater than that for men.) Is it because of early marriage? Is it because of lack of finances? Is it because certain individuals have an idea that it is "unladylike" to take a higher degree and especially to follow a career in science? Is it because women have not been informed of the great improving influence which higher education can exert upon their lives today and tomorrow? Is there lack of incentive; if so, what incentive is needed?

From all sides complaints are heard about the fact that women are a neglected resource in the development of highly trained persons for our expanding economy and technology. But those who complain frequently do not suggest a program which is able to tap this resource.

Recruitment

Larger numbers of women cannot be employed

TABLE IX

COMPARISON OF THE PERCENTAGE OF WOMEN ON THE FACULTY OF THE UNIVERSITY OF WISCONSIN ALL CAMPUSES 1941-42 - 1960-61*

Year	Percent Women	Five-Year Average
1960-61	19.6	
1959-60	19.7	
1958-59	20.4	20.4
1957-58	21.5	
1956-57**	20.7	
1955-56	18.0	
1954-55	18.6	
1953-54	19.1	19.1
1952-53	19.8	
1951-52	20.0	
1950-51	20.0	
1949-50	20.9	
1948-49	22.6	22.2
1947-48	23.0	
1946-47	24.6	
1945-46	24.6	
1944-45	25.7	
1943-44	24.9	23.6
1942-43	22.8	
1941-42	20.1	

* All branches of the University (instructors, assistant professors, associate professors, and professors) excluding administrators.

**Milwaukee Extension Center merged with Milwaukee State Teachers College to form University of Wisconsin-Milwaukee.

TABLE X

COMPARISON OF TOTAL NUMBERS OF MEN AND OF WOMEN ASSISTANT PROFESSORS AND INSTRUCTORS IN THE COLLEGE OF LETTERS AND SCIENCE, UNIVERSITY OF WISCONSIN, MADISON CAMPUS 1954-55 - 1960-61

Year	Total	Men	Women	% Women
1960-61	165	137	28	17.0
1959-60	143	120	23	16.1
1958-59	137	114	23	16.8
1957-58	122	99	23	18.9
1956-57	120	102	18	15.0
1955-56	118	104	14	11.9
1954-55	111	95	16	14.4

TABLE XI

COMPARISON OF TOTAL NUMBERS OF MEN AND OF WOMEN FULL AND ASSOCIATE PROFESSORS IN THE COLLEGE OF LETTERS AND SCIENCE, UNIVERSITY OF WISCONSIN, MADISON CAMPUS
1954-55 - 1960-61

Year	Total	Men	Women	% Women
1960-61	298	283	15	5.0
1959-60	279	267	12	4.3
1958-59	262	250	12	4.6
1957-58	243	233	10	4.1
1956-57	236	227	9	3.8
1955-56	241	230	11	4.6
1954-55	224	212	12	5.4

TABLE XII

COMPARISON OF TOTAL NUMBERS OF MEN AND OF WOMEN PROFESSORS (ALL RANKS) AND INSTRUCTORS IN THE COLLEGE OF LETTERS AND SCIENCE, UNIVERSITY OF WISCONSIN, MADISON CAMPUS
1954-55 - 1960-61

Year	Total	Men	Women	% Women
1960-61	463	420	43	9.3
1959-60	422	387	35	8.3
1958-59	399	364	35	8.8
1957-58	365	332	33	9.0
1956-57	356	329	27	7.6
1955-56	359	334	25	7.0
1954-55	335	307	28	8.4

in occupations which require advanced and highly specialized education unless larger numbers of women present themselves for specialized training. Despite demonstration of the capacity of women to distinguish themselves in science, medicine, and practically any field of human enterprise, few women in our culture choose the paths which lead to these careers. It is doubtful that this situation will change except through strong shifts in our cultural milieu or in response to urgencies dictated by clear and present national or international needs and spelled out in well-defined programs designed especially for the development and use of the Nation's womanpower.

Utilization

Women are understandably reluctant to enter programs of long and expensive training if their opportunities for service are either limited in number or less rewarding in type of service or compensation than opportunities for men who have similar qualifications.

Currently, employers in such fields as science, engineering, and medicine, including academic departments of universities, tend to choose the "blue ribbon" man instead of the "blue ribbon" woman. Some observers suspect that a "second place" man would win over the "blue ribbon" woman. Consideration of factors other than individual merit is reasonable in some instances, but sometimes these considerations have doubtful validity.

If, however, the number of highly qualified women applicants were equal to the number of highly qualified men applicants, the apparent discrimination might not persist. Certainly the likelihood of women being selected would be much greater. The sheer number of highly qualified women applicants would command the attention of employers and operate against neglecting the resource they represent.

Therefore, if the needs of the Nation so dictate, and if womanpower is a present and ready resource for recruitment, development, and utilization to meet those needs, a program designed specifically to claim this resource should be established. In the author's opinion, such a program must be sponsored at the national level if it is to provide the necessary incentive. It should be a program designed specifically for women and keyed to their special needs and potentialities. Opportunities for research, teaching, and productive contribution in fields now relatively neglected might be emphasized.

Such a program might illustrate a concept of the power and dignity of a womanhood fulfilled in a free society dedicated to human advancement—a concept in sharp contrast to the circumstances in some countries where women are highly trained—yes—but to be used as economic units in a slave society.

Meanwhile, each institution might consider whether its programs for counseling, advising, scholarships, fellowships, and other incentive projects, as well as faculty recruitment and utilization programs, are future-facing with respect to the prospective role of women in our society. Most of the practices in these programs are predicated upon principles of equal treatment of sexes in open competition.

The writer believes there must be greater attention to the separate and specific goal of providing incentive for more girls to continue their schooling to advanced levels and to employing more women in the teaching and research staffs of more university and college departments as soon as these women reach the market.

FOOTNOTES

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NON-IMMIGRANT FOREIGN STUDENTS: A SURVEY OF THEIR NEEDS AND INTERESTS

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IN THE academic year 1960-1961, New York University enrolled some 3200 students who were foreign citizens — a larger number perhaps than any other institution of higher education in the United States. Nearly two-thirds of these persons (1944) held temporary visas.[1]* Concern about the educational and related needs and interests of these foreign students on temporary visas recently led New York University to ask their cooperation in a study of their problems, with a view toward improving the services the University offers in helping to resolve them. Some of the data developed in this study seem to be of general interest and will be summarized in this article. As a preface to this summary, a brief discussion of the study methodology follows.

On May 1, 1961, a twenty-page questionnaire was mailed to the 1944 persons holding temporary visas and who were in residence for at least one of the two regular semesters during 1960-1961. The questionnaire was designed by Dr. John Dale Russell (then Director of NYU's Office of Institutional Research), under the general guidance of an ad hoc Committee on Foreign Students. In addition to the usual personal data, the questionnaire contained clusters of items about academic, physical, financial, social, and cultural needs and interests of the respondents. The last question solicited comments about subjects not fully developed. In answer to this invitation for comment, fully a third of the respondents (384 by the time data processing got under way), appended statements, many exceeding 200 words in length. In addition, literally hundreds of explanatory notes were scattered throughout the completed questionnaires. These qualitative data have been found to be invaluable in interpreting the quantitative responses.

When compared with known parameters such as sex and country of citizenship, the respondents seemed to constitute a fairly good sample not only of New York University's non-immigrant foreign student population but also of all foreign students on temporary visas in the United States. Although differences in questionnaire construction make direct comparisons hazardous between NYU's study and the excellent investigation directed by Dr. Homer Higbee, we quite agree with his judgment that our "findings are thoroughly consonant with (his) in those areas where we were looking for approximately the same things."[2] Unfortunately, the small number of African students in our sample makes any comparison questionable between our data and the IIE Survey of the African Student.[3]

Academic Problems

The central interest of any institution of higher education is, of course, the academic needs of its students. And certainly primary among the academic objectives of the foreign student is acquiring the knowledge and skills requisite for pursuing the career of his choice. In fact, what was most impressive about the answers to a question concerning the uses to which respondents planned to put their education once they got back home, was that only 5.5 percent selected "no definite purpose in mind."

It seems generally clear that foreign students have as their most important objective the acquisition of knowledge and skill. However, they tend also to have a secondary objective which is not always compatible with the first: obtaining some tangible certification of their American educational experience. More than three-quarters of the sample felt that an American degree was either essential (46.6%) or "highly desirable, but not absolutely essential" (31.3%). Another 9.1 percent felt they could accept certificates or diplomas in lieu of actual degrees. A mere 6.0 percent expressed little interest in official certification of any sort.

By far the most important service an institution of higher education provides to foreign students is the academic program it offers. The respondents to the survey underscored their awareness that the courses offered tend to be heavily oriented towards the needs of domestic clientele. To be sure several courses in English have been designed especially for foreign students. Some measure of the success of these courses, required of all students who do not exhibit the necessary proficiency in English usage, was revealed when only 5.7 percent of those who have been in residence for at least 12 months found their lack of familiarity with the English language a serious handicap in their studies. In fact, some felt the University program in English unnecessarily demanding. As one respondent put it, the emphasis placed on proper English usage is "to(sic) much."

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* Footnotes will be found at the end of the article.

It must be recognized, however, that something more might be attempted in other fields. In answer to the question, "If the University offered a special course designed to help you apply what you have learned to the situation in your home country, would you register for such a course?", nearly 75 percent said yes. It was comforting to learn that only a handful (2.6%) thought few or none of the courses they had taken would be useful when they returned home.

That a student's primary objective in obtaining knowledge and skill and his secondary objective in receiving official certification from an American university are not always complementary is supported by the reactions to the question, "Do you feel that requirements for a University degree are preventing you from taking courses you really need?". Nearly one-fifth (19.0%) replied that degree requirements were a more or less serious obstacle to taking courses they really needed. Answers to related questions and appended glosses suggest that much of the unhappiness exists because these students are not granted credit for what they deem to be comparable work taken at home. Quite a number of persons entered earnest pleas for some more satisfactory method of evaluating the courses they took before coming to the United States. These pleas are well taken. However thorny the thicket which crowds the path, a better way must be found for evaluating the credentials of students from abroad.

If a university's academic program is the most important service it can offer, then the guidance provided for using it best requires serious attention. The respondents made it very clear that they preferred to get advice on academic problems from their course instructors and not from full-time counselors, the Foreign Student Center staff, or other administrative officials. In fact, foreign students seemed to show much less hesitation in approaching their instructors for advice on academic matters than their American peers. Less than 20 percent (18.0%) of the respondents had never asked for it. And those who did seek the counsel of their instructors were generally pleased with the assistance they received. Only one respondent reported his instructors hostile, and but seven others (1.8%) thought them generally little interested in the respondents' academic problems. More than two-thirds of the sample, on the other hand, found the instructors they approached generally cordial and helpful.

Personal Problems

The line between academic and personal needs is not always sharply defined. Economic problems are an illustration of this. Fully half of the respondents (50.5%) said that they had experienced financial difficulties since coming to NYU. Of this group, 47.4 percent indicated that a major reason for their discomfiture was that expenses were higher than they had anticipated. Attached comments leave a firm impression that respondents considered the University at least partially to blame because satisfactory information about expenses was not made available before they left for the United States. (It should be noted parenthetically that some persons also felt information about the educational programs of American universities should be made much more easily accessible in their homelands.) In fact, some students in the sample believed their economic problems so much the University's responsibility that they felt it obliged to help mitigate them by such methods as providing employment, remitting tuition for all foreign students, waiving course requirements for those who were pressed for funds, and securing exemptions from sales and income taxes.

Whatever one may think of a university's obligation to underwrite certain of these financial needs (or is it the Federal Government's?), there are certainly two things that an institution of higher learning can readily do. One is to make accessible to students planning to come to the United States more adequate data about the financial commitments entailed in attending school here. Second, since one student in twenty is financially embarrassed from time to time by delays in the transmittal of funds from home, a university can establish a short-term revolving loan fund to alleviate this hardship.

Some of the other personal needs had substantial economic overtones. For example, 72.9 percent of the 140 respondents who experienced difficulty in obtaining suitable housing cited rental costs as the principal reason. Again, 22.7 percent of the 154 in the sample who found themselves unable to take satisfactory advantage of New York City's cultural facilities pointed to insufficient funds for admission fees as the major reason.

Most of the respondents expressed some concern about their difficulties in getting to meet other persons. Only 39.3 percent seemed entirely satisfied with the social contacts they had made. The most serious obstacle to developing a satisfactory social life was the slender amount of time left free from studies. Still, 15.1 percent reported that the dearth of opportunities to meet others was at fault. This lack of opportunity proved to be very much a function of length of time spent at the University. More than one respondent in three who had been here for less than six months (36.4%) complained about the absence of opportunities to meet other persons, but the percentage dropped sharply for the group which had been at the University for at least six months. Nevertheless, as many students pointed out in written comments, getting to know other students is an important part of the educational experience which a university can rather readily do much to facilitate.

Faculty assistance, which turned out to be so useful in dealing with the foreign student's academic difficulties, did not extend to the handling of his personal needs. It is not so much that instructors proved hostile to the foreign students who approached them with concerns of a non-academic nature, for this tended not to be the case. Only three respondents indicated that they had actually been rebuffed, and 18 others (4.7%) that instructors were only occasionally willing to help them work out personal affairs. The reason why faculty members proved to be of small assistance in helping foreign students cope with their non-academic troubles is that most students (66.7%) never approached them on these matters. That many students would, if they felt free to impose, is strongly suggested by the answers to a variety of other questions.

Non-Student Roles

The persons in the sample play several roles in addition to that of student. Among these are tourist and unofficial amabassador from abroad. When the respondents return to their homelands, they will assume, among others, the roles of university alumnus and interpreter of the United States. The questionnaire was designed to develop data primarily relating to the foreign students' role within the University, and this report has concentrated on it. However, several items have some relevance for analyzing their roles as ambassador from abroad and spokesman about the United States when they return home.

The respondents have a lively appreciation of their opportunity to play the role of unofficial ambassador. Only one person in six (16.7%) did not consider it his responsibility to speak on behalf of his country. Yet even of this small group 70 percent had done so to some extent anyway. The most obvious opportunity for the foreign student to explain his country to Americans is through giving more or less formal talks about it. Fully half of the sample (52.3%) had given at least one such speech or talk. Moreover, 25.8 percent had done so four or more times. While a few persons (2.6%) reported that they have been called upon more than they would like, nearly half of the sample (45.8%) expressed the desire for additional opportunities to present talks about their homelands.

The respondents may not have regarded it as such, but another kind of opportunity for explaining their countries to American citizens is presented when the foreign student is invited as a guest to a citizen's home. Opportunities of this sort were far more frequent than initially expected. Nearly nine-tenths of the sample (87.2%) had been guests in homes of United States citizens at least once. This high incidence of home entertainment is to some extent a result of the program whereby the Columbia Broadcasting System cooperates with New York University in arranging a home invitation on Thanksgiving Day for every foreign student who is prepared to accept one. But this cannot be the major explanation because many of the foreign students had been home guests on numerous occasions — 60.7 percent from four to 20 or more times. Although some respondents felt that they have been entertained more from a sense of duty than a desire for friendship, these were relatively few in number (4.4%).

The role foreign students will play in the future as interpreters of the United States to their fellow countrymen is much more difficult to assess. If the responses are representative, Americans can be rather sanguine about the manner in which our country will be portrayed when the foreign student returns home. Less than one person in five felt that he was not getting much of an opportunity to develop an understanding of American life and institutions; 41.1 percent thought that their opportunities had been thoroughly adequate. Another 40.6 percent did not consider them unsatisfactory but would like to have seen them increased.

There was no general agreement as to what sort of experiences would improve the foreign student's understanding of American life. But enough students (32.0%) indicated an interest in taking a course covering broadly all aspects of American life and institutions to justify such an offering.

Conclusions

This report has been so interspersed with conclusions that only one additional comment seems appropriate. Much of the data developed have not been included in this study because they are applicable only to New York University. These unreported data have proved valuable enough to NYU so that it is believed that other institutions with large populations of foreign students will find it highly worthwhile to undertake surveys of their own.

FOOTNOTES

1. The figures New York University reported to the Institute of International Education (Open Doors, 1961, pp. 11, 44), differ from those reported in the text primarily because the Institute does not include in its surveys the

foreign students on temporary visas enrolled in NYU's non-degree granting Division of General Education.

2. Letter of November 10, 1961. The Higbee report is *The Status of Foreign Student Advising in the United States Universities and Colleges*, East Lansing, Michigan: 1961.

3. James M. Davis, Russell G. Hanson, and Duane R. Burnor, *IIE Survey of the African Student: His Achievements and His Problems*, New York: 1961.

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COLLEGE FRESHMEN'S MOTIVES FOR GOING TO COLLEGE AND ACADEMIC ACHIEVEMENT

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INSTITUTIONS OF higher learning are confronted with the task of accommodating qualified students who, in increasing numbers, wish to be admitted (7, 11). This task is quite formidable in view of the difficulty to select, fairly and efficiently, from among many applicants those who seem best qualified to profit from advanced training (2). Moreover, it is noted that the attrition rate of college students is distressingly high (6) and that many students who remain in college are underachieving (5, 12). Research in the area of college admission traditionally has focused on relating intellective predictors to intellective criteria but has recently included the consideration of non-intellective predictors and their relationship to intellective and/or non-intellective criteria (2). For instance, student perceptions of college (14), motivation for going and remaining in college (3, 10), and psychological needs of college freshmen (8) are some of the factors which significantly predict academic achievement and/or persistence in college (13).

The purpose of this study was to determine the extent to which qualitative differences in freshmen's motives for going to college are related to their academic achievement, based on instructors' estimates.

Subjects and Instrument Used

The sample used in this study consisted of 38 male and 49 female college freshmen, 17-19 years of age, who entered Fairleigh Dickinson University in the fall of 1959. These students represented a cross-section of the four major colleges (Liberal Arts, Science and Engineering, Business Administration, and Education).

Students' motives for attending college were elicited by a scale which was especially developed for this study, the L-M Scale of Motives for Going to College, hereafter referred to as "the scale." The construction of the scale and evidence regarding validity and reliability are discussed elsewhere (9). The scale consists of 27 reasons, reflecting varying degrees of social desirability, which might prompt a high-school senior to pursue a college education. These reasons, listed in Table I, comprise three types: "occupational-economic" (nine reasons), "academic-idealistic" (seven reasons), and "conformity-social" (11 reasons).

Procedure

The scale was administered to 67 male and 69 female freshmen while enrolled in orientation classes. The students were directed to read through the list of 27 reasons and then to check three reasons which have influenced them most in going to college, three reasons which have influenced them least, six reasons which influenced them much, and, finally, six reasons which they regarded as slightly influential. In the analysis of data, only most and least influential reasons were used. On the basis of students' responses, seven motive categories were established which are enumerated in Table II.

In many previous studies, students' achievement levels were determined by noting the discrepancy, if any, between intelligence test scores (representing predicted achievement) and grade-point ratios (constituting the actual achievement). The validity of this procedure has been severely questioned (1). It was felt, therefore, that instructor ratings, obtained for the present study, would give a more meaningful and direct estimate of students' academic achievement. Toward the end of the 1959-60 academic year, 81 instructors in the various disciplines were asked to rate, on a five-point scale, each student's academic achievement with respect to his intellectual capacity. The analysis of data is based on only those subjects for whom five faculty ratings were obtained. For each of the 87 students, comprising the sample, a median achievement rating was determined. The higher the rating, the greater the degree of achievement or, conversely, the lower this rating, the greater is the degree of underachievement.

Mean achievement rating scores were computed for students whose responses placed them in one of the seven motive categories. Then, since there were few cases in certain categories, these were combined thusly: "O-E" and "O-mixed," "A-I" and "A-mixed," and "C-S" and "C-mixed." The significance of the differences between means of

TABLE I

REASONS COMPRISING THE L-M SCALE OF MOTIVES FOR GOING TO COLLEGE

Type of Motive	No. *	Reason
Occupational-Economic	1.	To get a better paying job
	4.	To meet the requirements of my professional choice
	7.	To help me choose a vocation
	10.	To keep from going to full-time work
	13.	To keep out of the draft
	16.	To have more influence in the community
	19.	To have a high standing in the family
	21.	To meet the requirements of a graduate school
	25.	To make contacts with people who might help me in my professional advancement
Academic-Idealistic	2.	To help satisfy my curiosity in an area of study
	5.	To satisfy my desire to learn
	8.	To be a more well-rounded person
	15.	To be of better service to society
	17.	To help me think logically
	20.	To help me develop a set of values
	27.	To be exposed to stimulating ideas
Conformity-Social	3.	To make friends
	6.	To participate in college social and athletic activities
	9.	To develop me socially
	11.	To enable me to get along better with others
	12.	To meet a future mate
	14.	To be like my friends since most of them are going to college
	18.	To please my parents
	22.	To please my teacher
	23.	To help me better understand myself and others
	24.	To follow the path of people whom I respect
	27.	To increase my status, because people nowadays are expected to get an education

*Order in which the reason was listed in the scale

TABLE II

DESCRIPTION OF SEVEN MOTIVE CATEGORIES

Designation of Motive Category	Description
O-E	Three "occupational-economic" reasons
A-I	Three "academic-idealistic" reasons
C-S	Three "conformity-social" reasons
O-mixed	Two "occupational-economic" reasons and one in any other category
A-mixed	Two "academic-idealistic" reasons and one in any other category
C-mixed	Two "conformity-social" reasons and one in any other category
O-A-C	One reason each from the categories "O-E," "A-I," and "C-S"

TABLE III

MEAN ACHIEVEMENT RATING SCORES RELATED TO REASONS REGARDED AS MOST INFLUENTIAL FOR GOING TO COLLEGE

Motive Category*	Men (N=38)	Women (N=49)	Total (N=87)
O-E	3. 01** (N= 3)	....	3. 01 (N= 3)
A-I	3. 38 (N= 3)	2. 99 (N= 7)	3. 10 (N=10)
O-mixed	3. 07 (N=17)	3. 03 (N=10)	3. 05 (N=27)
A-mixed	3. 25 (N= 7)	3. 25 (N=19)	3. 25 (N=26)
C-mixed	3. 13 (N= 3)	3. 00 (N= 1)	3. 09 (N= 4)
O-A-C	3. 12 (N= 5)	3. 19 (N=12)	3. 17 (N=17)

* Motive categories are described in Table II.

**The higher the score, the greater the degree of achievement.

TABLE IV

MEAN ACHIEVEMENT RATING SCORES RELATED TO REASONS REGARDED AS LEAST INFLUENTIAL FOR GOING TO COLLEGE

Motive Category	Men (N=38)	Women (N=49)	Total (N=87)
O-E	2.71 (N= 2)	2.21 (N= 2)	2.46 (N= 4)
C-S	3.00 (N= 4)	3.18 (N= 2)	3.06 (N= 6)
O-mixed	3.19 (N=14)	3.09 (N=20)	3.13 (N=34)
C-mixed	3.15 (N=15)	3.32 (N=23)	3.25 (N=38)
O-A-C	3.21 (N= 3)	2.42 (N= 2)	2.90 (N= 5)

TABLE V

t AND *p* VALUES OBTAINED IN TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEAN ACHIEVEMENT RATING SCORES OF MALE STUDENTS WHO REGARDED CERTAIN REASONS AS MOST INFLUENTIAL

Motive Category	N	Mean	Variance	t	p
Occupational-Economic	20	3.06	.19	1.6	> .05
Academic-Idealistic	10	3.29	.09		

TABLE VI

t AND p VALUES OBTAINED IN TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEAN ACHIEVEMENT RATING SCORES OF FEMALE STUDENTS WHO REGARDED CERTAIN REASONS AS MOST INFLUENTIAL

Motive Category	N	Mean	Variance	t	p
Occupational-Economic	10	3.03	.20	.79	> .05
Academic-Idealistic	26	3.18	.36		

TABLE VII

t AND p VALUES OBTAINED IN TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEAN ACHIEVEMENT RATINGS OF MALE STUDENTS WHO REGARDED CERTAIN REASONS AS LEAST INFLUENTIAL

Motive Category	N	Mean	Variance	t	p
Occupational-Materialistic	16	3.13	.138	.03	> .05
Conformity-Social	19	3.12	.150		

TABLE VIII

t AND p VALUES OBTAINED IN TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEAN ACHIEVEMENT RATINGS OF FEMALE STUDENTS WHO REGARDED CERTAIN REASONS AS LEAST INFLUENTIAL

Motive Category	N	Mean	Variance	t	p
Occupational-Materialistic	22	3.06	.345	1.6	> .05
Conformity-Social	25	3.31	.241		

combined motive categories was ascertained by applying t tests. The .05 level was adopted as the criterion of significance.

Findings

Tables III and IV present mean achievement rating scores of male and female college freshmen who regarded certain types of motives as most and least influential in their decisions to attend college. Data included in Tables V through VIII show the results of the tests of the significance of the differences between mean achievement rating scores. The results indicate that, for this sample, there exists no significant relationship between type of motivation for going to college and academic achievement.

Undoubtedly there are educators and college admission officials who think, a priori, that certain reasons for wanting to attend college are more desirable than others. For instance, when interviewing college applicants there may be a tendency to be partial to students who manifest "academic-idealistic" rather than "occupational-economic" points of view. It is generally agreed, however, that one crucial, personal criterion of college success is that the student achieves satisfactorily. This study suggests that "occupationally"-oriented students are just as likely to achieve commensurate with their estimated intellectual capacity as are "academically"-oriented and "conformity"-oriented freshmen. It seems, therefore, that a major determinant of academic achievement is not the quality or type of motive for attending college, but the intensity of the student's commitment to pursue his education to whatever end appears relevant at the moment.

In view of the importance attached to student motivation, it would certainly be worthwhile to replicate a study of this nature in other institutions to determine the generality of the conclusion drawn.

Summary

A sample of 38 male and 49 female college freshmen was selected, respresentative of the 1959 freshman class of Fairleigh Dickinson University, Teaneck, New Jersey. Students' motives for going to college were compared with their academic achievement, judged by at least five of their instructors. No significant relationship was ascertained between quality and type of motivation and academic achievement as measured in this study.

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EXPERIMENT IN INDEPENDENT STUDY (1956-1960)*

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ANTIOCH COLLEGE has long sought to discover ways by which students could take a greater share of the responsibility for their own education.[1] It has tried to achieve this objective in a variety of ways: in its programs of work experience and education abroad, where students are almost completely on their own;[2] in its plan for community government, where students lead in planning and conducting many activities of the college program; in using students in freshman orientation and the advising program, in which upper-class students are the only adult residential advisers in freshman dormitories; and in the Administrative Council, where students take part with faculty members in making decisions on college policies and program.

While the College has sought to provide comparable kinds of responsibility-taking experiences within its academic program (through tutorial studies and credit by examination), these experiences have been largely limited to its more able students. For the most part, students have been expected to attend regularly scheduled class meetings, three or five times a week for 12 or 24 weeks, depending on the number of credits offered. Implicit in this scheduling was the assumption that students needed at least this many meeting hours with the instructor to learn effectively. But did they?

Beginning in 1956, the College began to examine this assumption more closely. It proposed controlled group studies to test various methods of independent study in regular teaching. The purpose was to see whether these independent study methods could help students take more responsibility for their own learning--and whether the College might not only increase the quality of students' education, but also save instructional time.

Hypothesis

Two principal hypotheses were proposed:

(1) That students in the independent study courses would learn as much as those taking courses using regular lecture-discussion instruction.

(2) That students in the independent study courses would be as satisfied with the courses as those taking courses using the regular lecture-discussion methods.

The College also sought to study the amount of instructional time used under both methods of instruction.

Plan of the Studies

The experiment called for setting up control and experimental groups for most of the courses in this study.[3] Both groups were to be taught by the regular and the experimental methods. Both groups were to be taught by the same instructor, and both were matched on a number of variables, including field, year in college, sex, and background knowledge at the time of taking the courses. Students taking the courses were expected to cover the same course materials and to achieve the same course objectives as outlined in previously prepared syllabi. The principal difference between the groups was that the experimental groups used a period of independent work. This period varied from course to course; the independent study groups averaged 20 to 30, and in some instances 40, fewer class hours than did those taught the regular way.[4]

The Instruments of the Study

Pre-tests used to determine the comparability of the groups included the Yale I Educational Aptitude Test, as a measure of the students' scholastic ability; the Yale 5 Educational Aptitude Test, as a measure of mathematical ability; and several course examinations, including both subject-matter and task-oriented tests, as a measure of students' course knowledge at the time of beginning the course. In addition, members of the control and experimental groups were studied for their comparability on each of the following variables: field, sex, year in college, and rank in high school.

Post-course measures included multiple-choice and short-answer tests, to determine content learning, and essay, task, and laboratory problem assignments, to measure critical thinking ability and ability to handle complex problems.

Two measures were used to obtain evidence of the students' satisfactions and dissatisfactions with the teaching procedures: a teacher rating scale (Survey of Student Opinion of Teachers) which has been used at Antioch since 1947; and a student satisfaction scale developed for the study to get information about students' reactions to the teaching procedures used.[5]

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* All footnotes will be found at end of article.

In addition, instructors were asked to keep records of the time used in teaching the different ways. These records, filled out weekly, reported time spent in class, in conferences with students, in preparation for classes, and in evaluation of student work. The smallest unit of time used was a quarter of an hour.

The Independent Study Courses

Organization

Instructors were given considerable latitude in the method of independent study used. Some instructors used principally teams or small groups of five to ten students, who did their autonomous work together. Some instructors used individual study approaches, or what came to be known as the "lone wolf" method of independent study. Still others used combinations of small group and individual independent study.

Instructor-Student Meeting Patterns

Instructors were free to choose how they wished to organize their courses. Sometimes they asked students to do some independent work each week and meet once or twice a week with the instructor (in contrast to the control group, which met with the instructor for all regularly scheduled classes). Other instructors used "block units," meeting the experimental groups regularly during the early and latter parts of the course and scheduling blocks of completely independent work for one, two, or three weeks at intervals in the course. Still other instructors, depending on the instructional material and student needs, used different combinations of regular class meetings and independent work.

Training Procedures

Considerable attention was given to preparing students for working on their own. Training materials developed for this purpose included discussion outlines and thought questions for the autonomous study groups, reference materials, and specially prepared instructional materials. Among the latter were aids designed for chairmen of small groups on how to lead a discussion, suggestions for discussion recorders, and suggested study tactics for individuals working on their own or in small groups.[6] In addition, a number of instructors conducted demonstration sessions on effective and ineffective work in small groups and held post-class conferences with the chairmen and recorders of small groups. While instructors spent different amounts of time in training groups or individuals for working on their own, some kind of training aid was prepared for each independent study group.

Results

Achievements of the Group

(1) Students learned equally well whether they had studied under the regular method of instruction or under the experimental method of independent study. No significant pattern emerged favoring one group over the other. This held true whether multiple-choice examinations, short-answer tests, essays, or task assignments were used to evaluate the results. It held true for each year of the study, and it held true for both beginning and advanced courses.

(2) Data on retention of learning (two years after completion of the course) revealed no significant differences favoring one group over the other.

(3) There was no evidence that the independent study methods needed to be reserved for the superior or advanced student only. Students at differing levels of ability and at different year levels did well (or poorly) with these teaching methods. Academic potential, at least within the ranges studied at Antioch,[7] did not appear to be the sole determiner in the success or failure of these methods, and there were some indications that personality and attitudinal factors might be as important in learning by these methods as individual ability.

Satisfaction with Control and Experimental Methods

While students still tended to prefer the lecture-discussion teaching, they expressed a growing acceptance of and satisfaction with independent study as they became more familiar with it. The study data showed a decided shift in student attitudes from one of general dissatisfaction with independent study in 1956, to few differences in the degree of satisfaction under either method of instruction in 1960 There is little question, as analyses of the student satisfaction scales and conferences with students indicated, that students come to college largely unprepared for independent learning. If independent study methods are to succeed, students need a great deal of help in learning how to work on their own.

Use of Instructional Time

The study data revealed that there were few savings in instructional time during the early years of the study because of the additional time needed to prepare lesson material for the independent study groups. There was some indication, however, that time might be saved in some courses once the instructor had mastered the use of independent study and had completed the cycle of preparing special materials. This was especially true for several courses in the last two years of the experiment, including two philosophy courses in which the instructor saved up to 57 percent of the total time that normal procedures would have required for the same number of students.

Conclusions

Although an instructor satisfaction scale was not used, instructor reactions to the experimental procedures were secured through written reports and individual conferences. Perhaps the best evidence of their feelings is the fact that most instructors (especially those participating in the studies since 1957) have continued to use independent study procedures, and in the fact that an increasing number of faculty members, including many who did not participate in the experimental studies themselves, are now offering students the opportunity for on- as well as off-campus independent study.

Antioch College does not view these new methods of instruction as a panacea for higher education's twin problems of quality and quantity. Nor does it view them as a glorified do-it-yourself plan that works simply by turning the student loose on his own; for the instructor must carefully select and structure the student's learning experiences. The instructor's job, although it may be different, is no less difficult.

While it is not clear that the experimental methods will result in a net saving in instructional time, for those who have been engaged in the study this fact in and of itself is not the significant point. The real promise of the studies is in the shift they may bring with them in the educational orientation of both students and teachers. Most importantly, they argue for the far greater use of the student's own resources for learning. They press us to shake ourselves loose from some of our educational habits, and they offer new assurances of the unused potential for learning—and one that we have hardly begun to tap—that exists within the student himself.

FOOTNOTES

1. This report was originally presented as Antioch College Reports, No. 2, March, 1961. The studies reported herein were supported by grants from the Fund for the Advancement of Education.
2. Under Antioch's educational plan of study-plus-work, students alternate their time between on- and off-campus experiences. As part of the off-campus experience, students hold regular jobs at regular pay. The program presently includes over 450 co-operating employers in 30 states. The College has recently extended this concept of education still further so that students are able to spend a full year abroad as part of their degree program. About 150 students are expected to take part in this program in some 20 countries this year.
3. Of 19 courses studied from 1956 to 1960, 13 were taught by both experimental and control procedures.
4. The reduction in instructional time ranged from 34 percent to 61 percent, with a median of 46 percent.
5. In addition to these measures, two other tests of skills in and attitudes toward independent study were used in the 1957-58 study. These were a Situational Problems Test developed at Antioch and five scales of the California Personality Inventory. These measures are described in more detail in the 1957-58 study report. See also Ruth Churchill, Evaluation of Independent Study in College Courses (unpublished doctoral thesis), 1960, University of Minnesota.
6. A number of these aids are being brought together in a manual on independent study that the College is preparing (Morris Keeton and Samuel Baskin, Independent Study: A Teacher's Guide) to help other faculty members train students for working on their own.
7. These results were not confined to Antioch alone. Surveying the results of some sixteen institutions (both public and private) that had engaged in similar research, a report of the Fund for the Advancement of Education notes that "Almost without exception, the customary academic examinations showed that students in the independent study experiments learned at least as much as the students who had regular class work. Rarely were there statistically significant differences in the performance of the experimental and the control groups on regular or special examination."

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A COMPARISON OF KNOWLEDGE OF HIGH SCHOOL SUBJECTS POSSESSED BY COLLEGE APPLICANTS AND NON-APPLICANTS

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THIS STUDY compared Kansas State Teachers College applicants with non-applicants in regard to knowledge of high school subjects. The two groups were equated for ability.

Measuring Instruments Used

The measure of ability used in this study was the score on the General Ability test, a component of the Kansas High School Senior Comprehensive Examination battery, published by the Bureau of Educational Measurements, Kansas State Teachers College. The measure of knowledge of high school subjects was the Total Achievement score, which is a composite derived from scores on the subtests of the Kansas High School Senior Comprehensive Examinations: Science, Mathematics, English, and Social Studies.

Subjects and Method

The applicants were the 707 first-semester freshmen coming to Kansas State Teachers College in 1960 from Kansas high schools at which they previously had taken the Senior Comprehensive Examinations. The Total Achievement score of each of the 707 freshmen was compared with the median Total Achievement score of those high school seniors who took the Senior Comprehensive Examinations at the same time and obtained exactly the same General Ability score as the freshmen. The median Total Achievement score was not the median for non-applicants to Kansas State Teachers College, but was the combined median for applicants and non-applicants. If students with the same General Ability scores as those of the 707 entering freshmen were randomly selected from the 17,007 high school seniors who took the Senior Comprehensive Examinations when the entering freshmen did, about half of the students would be expected to be above the median Total Achievement score and half below.

To compute the medians, the Total Achievement scores were grouped into intervals with an interval length of one score unit. Thus, in effect, scores were spread uniformly throughout the interval containing them, even though all the obtained scores within an interval were identical in size. Each Total Achievement score falling in the interval containing the median was considered to be partly below the median and partly above the median; the fraction of the score considered to be above or below the median corresponded to the fraction of the interval falling on that side of the median.

Results of First Analysis

The table at the top of the next page shows, for each General Ability high school decile, the number of freshmen above and below the high school medians. The total number of freshmen scoring below the median Total Achievement score for high school seniors possessing this particular General Ability score was 305.58 and the number above the median, 401.42. Using an expected value of $N/2 = 353.5$ for the number above or below the median, and making a correction for continuity, the binomial test yielded a z of 3.6. Normal probability curve tables show that the one-tailed probability of getting such a large z by chance is .0002. In other words, only two times in 10,000 would such a preponderance of students scoring above the median occur from sampling error. The conclusion is that the superior knowledge of high school subjects possessed by Kansas State Teachers College freshmen compared with high school graduates of the same ability is not to be attributed to chance, but instead indicates the existence of special determining factors. This is especially interesting in view of the fact that Kansas State Teachers College is required by state law to accept any applicants who are Kansas high school graduates; the college admission policy cannot account for these results.

NUMBER OF COLLEGE FRESHMEN ABOVE AND BELOW MEDIAN TOTAL ACHIEVEMENT SCORES FOR HIGH SCHOOL STUDENTS OF EQUAL ABILITY

High School General Ability Decile	Number of Freshmen	Number Below Median Total Achievement Score	Number Above Median Total Achievement Score
1	18	6	12
2	14	2	12
3	40	14	26
4	59	22	37
5	52	19	33
6	61	23.23	37.77
7	89	41.88	47.12
8	112	47.71	64.29
9	145	70.08	74.92
10	117	59.68	57.32
Total	707	305.58	401.42

Results of Second Analysis

A comparison of the number of freshmen above and below the median was made for the freshmen from the lower seven high school General Ability deciles. Of those 333 freshmen, 128.11 were below the median and 204.89 were above the median. This provides a *z* of 4.1, for which the one-tailed probability of chance occurrence is .00003. On the other hand, of the 374 students in the 8th, 9th, and 10th deciles, 177.47 were below the median, and 196.53 above, yielding a *z* of .94, which is so low as to occur 17 percent of the time by chance, so the difference in number above and below the median is not significant even at the .10 level.

The results of this study are consistent with the assumption that ability is not a factor in determining whether a Kansas high school graduate will become a Kansas State Teachers College applicant, except indirectly through its effect on his knowledge of high school subjects. The table shows that more people from the higher levels of General Ability entered Kansas State Teachers College than from the lower levels. This can be explained in this way: more people in the upper levels of General Ability have good Total Achievement scores than in the lower levels. In the upper levels of General Ability, the median Total Achievement scores are so high that people below the median, as well as those above, generally have good Total Achievement. But the median Total Achievement scores for the lower levels of General Ability are so low that a good Total Achievement score almost certainly would be above the median.

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COLLEGE PREPARATORY COURSE WORK*

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FOR SEVERAL years The University of Tennessee has offered special summer courses for high school graduates planning to become college freshmen.[1] A student may elect to take any one (but not more than three) of the following non-credit courses (25 hours of classroom time each): "How to Study," "Developmental Reading," "Preparatory English," or "Preparatory Mathematics."

What effect, if any, do these courses have on college-bound students? Do they, as might be assumed, assist a pre-freshman in his later college work?

Since individuals enrolling do so in order to help themselves in their freshman year, it seems reasonable to expect that such students would profit by the courses. At least they should do no worse in college than their counterparts, the freshmen who do not take these courses.

Freshman orientation courses which give information on study habits, reading practices, and use of a library are found in many institutions.[2] Based on the findings at The University of Tennessee, it seems that a note of caution is advisable and that such work should be evaluated in order to assure that the course is really helping the students involved.

Problem

This study sought to determine the effect of the summer program on first quarter college grades of the students involved. Those enrolled in the summers of 1959, 1960, and 1961 were included in the review. Students who took one or more of the pre-freshman courses and later entered The University of Tennessee (the Experimental Group) were compared with a matched group who did not take the courses (the Control Group).

For each individual in the Experimental Group a person was selected as a member of the Control Group who had the same ACT score,[3] same sex, entered the same college, and either lived on or off the campus. Efforts were made to keep the high school grade-point averages close, but, as will be seen, in certain cases a significant difference occurred in them.[4]

Comparing the grades of the Experimental and Control Groups at the end of the first quarter in The University of Tennessee as full-time freshmen, the difference in achievement could be obtained. Using a "t" test, with the matched pair design, the significance of the difference in grade-point average was determined for the individual course (in the case of "Preparatory English" and "Preparatory Mathematics") or overall college grade-point average (for "How to Study" and "Developmental Reading" courses).

Results

In Table I is presented a review of the grade-point averages of the Experimental Group and the Control Group. The Experimental Group took the course in improving study methods. Although the Control Group in 1959 had a higher high school grade-point average ($< .05$), an analysis of covariance was not necessary since the correlation between high school grade-point average and first quarter overall grades was not significant. Data in Table I indicate that students taking the "How to Study" course consistently scored lower in their first quarter of college academic work than did those in the Control Group. Findings in the University of Tennessee survey do not agree with the research reported on an apparently similar course conducted in another state university where there was an immediate and continuing increase in scholastic gain for students taking a study skills course.[5]

The results of a course in "Developmental Reading" on the Experimental Group as compared with the Control Group without the course are reflected in Table II. After 1959, in which there appears an unusually high grade-point average in the Control Group at least in relation to other college grades shown in this study, no significant difference appears between the two groups although the Control Group's mean grade-point average consistently runs higher. While previous studies have brought out the fact that remedial reading programs can improve scholastic standing, not particularly specific course grades, the fact that such studies have been

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* Footnotes will be found at end of article.

TABLE I

COMPARISON OF THE EXPERIMENTAL GROUP IN THE "HOW TO STUDY" COURSE WITH THE CONTROL GROUP ON THE BASIS OF FIRST QUARTER OVERALL GRADE-POINT AVERAGE

		Control	Experimental		
Year	N	Mean College GPA	Mean College GPA	t	Significance
1959	9	1.95*	1.22	2.18	<.05
1960	15	1.84	1.43	2.58	<.025
1961	16	2.04	1.65	4.51	<.01
Combined	40	1.95	1.47	4.07	<.005

*All grade-point averages expressed in terms of a four point system where "A" = 4 and "D" = 1.

TABLE II

COMPARISON OF THE EXPERIMENTAL GROUP IN THE "DEVELOPMENTAL READING" COURSE WITH THE CONTROL GROUP ON THE BASIS OF FIRST QUARTER OVERALL GRADE-POINT AVERAGE

		Control	Experimental		
Year	N	Mean College GPA	Mean College GPA	t	Significance
1959	6	2.62	1.89	3.42	<.01
1960	10	1.61	1.37*	1.23	N/S*
1961	9	1.92	1.63	1.31	N/S
Combined	25	1.96	1.59	2.94	<.01

*Although the Experimental Group had a significantly higher high school grade-point average (<.01), an analysis of covariance was not necessary, since the correlation between high school grade-point average and first quarter overall grade-point average was not significant.

TABLE III

COMPARISON OF THE EXPERIMENTAL GROUP IN THE "PREPARATORY ENGLISH" COURSE WITH THE CONTROL GROUP ON THE BASIS OF FIRST QUARTER GRADES IN FRESHMAN ENGLISH

		Control	Experimental		
Year	N	Mean College GPA	Mean College GPA	t	Significance
1959	10	1.60*	1.20	1.08	N/S*
1960	13	1.54	1.77	-1.14	N/S
1961	16	1.25	1.13	.50	N/S
Combined	39	1.44	1.36	.50	N/S

*Although the Control Group had a higher high school grade-point average (<.05), an analysis of covariance was not necessary, since the correlation between high school grade-point average and first quarter English grades was not significant.

TABLE IV

COMPARISON OF THE EXPERIMENTAL GROUP IN THE "PREPARATORY MATHEMATICS" COURSE WITH THE CONTROL GROUP ON THE BASIS OF FIRST QUARTER GRADES IN FRESHMAN MATHEMATICS

		Control	Experimental		
Year	N	Mean College GPA	Mean College GPA	t	Significance
1959	4	1.75	.50	2.61	<.05
1960	4	2.25	.50	3.66	<.025
1961	7	1.86	1.86	0	N/S
Combined	15	1.93	1.13	2.18	<.025

evaluated over longer periods of time may influence the outcome.[6] The students in The University of Tennessee who took "Developmental Reading" did not show evidence of an immediate advantage in scholastic success over their counterparts; in fact, they showed a slight negative reaction.

Results from "Preparatory English, " as seen in Table III, indicate no significant differences among the groups. Those who took the course in "Preparatory English" performed in college English in almost the same manner as the Control Group. In 1960 the Experimental Group did slightly but not significantly better. Since the course closely parallels the content of freshman English, lack of success is somewhat surprising. Students taking it, however, are not receiving any detrimental effects.

Although the numbers involved are small, students enrolled in the "Preparatory Mathematics" course (see Table IV) performed two years out of three significantly lower than the Control Group in freshman mathematics. It appears safe to say, therefore, that pre-freshmen electing this mathematics course will do no better than students who do not take it.[7]

Summary

At first glance the results of these pre-freshman courses at the University seem to leave much to be desired; however, the indications are that there is a much greater and more fundamental problem involved. Students elect to take these courses, not knowing whether they are really deficient in the skill involved or not. Having taken the skill course, they either fail to improve or perform worse than a control individual.

Possibly a selecting process is occurring which brings a certain type of student to take these courses, thereby establishing a variable which this research failed to control. These students,for example, give up various other summer plans in order to enroll in the courses which they elected to take, which their parents believed they needed, or which some other person had advised them to take. Therefore, either the student or someone in whom the student has confidence, has indicated that they believe the prospective freshman is weak in a given subject or at least has room for improvement in certain skills before entering college.If this theory is right, students in the Experimental Group may have a feeling of inadequacy or lack of self-confidence which is strengthened and confirmed by their initiation into college work. Another possible theory is that pre-freshmen enrolling expect their summer's course-work experience to serve as a panacea for all their academic difficulties. (A study at The University of Tennessee is being designed to test these theories.)

Students who take preparatory courses and later enroll in The University of Tennessee apparently receive little immediate benefit from these courses as far as grades and grade-point averages are concerned. Of course, if in actuality such persons are influenced in their college success by non-intellectual factors, such as self-confidence, then there may have been improvement by the Experimental Group which this research did not record.

This study suggests that the teaching-learning situation in elective preparatory courses may need to be reviewed to see if there are certain other approaches in teaching these classes which might produce results different from those obtained in this study. Different teaching-learning situations might be more suitable for the type of individuals enrolling.

FOOTNOTES

* Some of material in this paper was presented to the Nashville Conference on Research related to college admissions sponsored by the Southern Regional Education Board, August 1962.

1 College credit is not given for these courses. The Division of University Extension, which administers these courses, uses regular University faculty members to teach the courses.

2 George H. Greene, "Freshman Orientation Courses in Small Colleges, " Personnel and Guidance Journal, XXXII, No. 2 (April, 1954), pp. 480-482.

3 Other research in The University of Tennessee has shown that high school grades or American College Testing scores,when used individually, predict college grades equally well (only one point difference in favor of high school grades). See E. E. Cureton, "Background Characteristics of the Freshman Class Entering The University of Tennessee in September, 1960, " Mimeographed, 1962.

4 The mean high school grade-point average for the Experimental Group was 2. 5, which is significantly lower than the total freshman mean grade-point average of 3. 0 (in the fall of 1961), but not significantly different from that of the Control Group (also 2. 5).

5 James G. Shaw, "An Evaluation of a Study Skills Course, " Personnel and Guidance Journal, XXXIII (April, 1955), pp. 465-468.

6 John R. Wittenborn, "Classes in Remedial Reading and Study Habits, " Journal of Educational Research, XXXVII, No. 8 (April, 1944), pp. 571-586.

7 In a somewhat similar study made at Cornell University some years ago, no significant difference appeared between a control and experimental group, although those involved believed the course definitely served to help the students enrolled. J. S. Ahmann and M. D. Glock, "An Evaluation of the Effectiveness of a Freshman Mathematics Course, " Journal of Educational Psychology, L (February 1959), pp. 41-45.

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STUDY OF UNDERGRADUATES OF UNIFORMLY HIGH ABILITY

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OPPORTUNITIES for increasing selectivity in undergraduate admissions plus a growing number of national programs for the identification of the talented have resulted in the presence in recent Yale classes of a number of very able students with relatively equal promise for work in the Humanities and Sciences. Interest in the undergraduate careers of these promising young scholars, and in particular the *curricular programs* they chose, led the Office of Educational Research at Yale to study a sample of uniformly able students from the 1959 and 1960 classes; its findings are summarized in this report.[1]*

Criteria for Sample Selection

The sample consisted of 48 men (Yale College and School of Engineering combined); 23 from the class of 1959, of whom 18 graduated in 1959, and 25 seniors from the class of 1960. At matriculation, each student had a prediction of 80 or higher on a scale on which the average for all matriculants was approximately 77. In addition, each student had high College Board scores on two verbal and two quantitative entrance examinations.[2] There were more independent than public school graduates (27 as compared to 21), and roughly two-thirds were recipients of financial aid from University or outside scholarship programs.

The 1959 sample provided statistical data on most recent graduates while the 1960 sample furnished both statistical and interview data on seniors. Since Yale's permissive entrance examination requirements limit the possibilities for indentification of student abilities in the quantitative area, the 1959 sample had to be drawn from only 50 percent of the class since only 501 of the 1,002 matriculants had offered the four-year mathematics achievement score for entrance. Similarly, the 1960 sample had to be drawn from the 55 percent who had offered mathematics achievement scores at entrance.

Academic and Extra-Curricular Performance

Of those completing three years' work, two-thirds did so at a level of 85 or above while roughly only one-sixth produced non-honors work. Three-year averages for 60 percent of the sample placed them in the top 10 percent of their class. Of the 18 members of the class of 1959 graduating on schedule, 12 earned graduation honors, four were elected to Phi Beta Kappa, and four to Sigma Xi.[3]

Extra-curricular interests of the group were heavily weighted in favor of the non-athletic. There was some participation in intramural sports but none in major varsity sports. Debating, political organizations, professional societies, literary and journalistic groups, and service organizations were the most popular extra-curricular activities.

Fields of Undergraduate Major

Before coming to Yale, two-thirds of the sample expressed a desire to major in Engineering or one of the Sciences (Table I). Pre-matriculation percentages for the three broad divisions were as follows: Science and Engineering, 69 percent; Arts and Humanities, and Social Sciences, 25 percent (6 percent were uncertain about their probable college major). In college, however, the sample exhibited a marked shift away from the Sciences and Engineering. Final percentages were: Arts and Humanities, and Social Sciences, 63 percent; Sciences and Engineering, 37 percent. The 1959 sample contained one Scholar of the House (Physics). There were no Scholars of the House in the 1960 sample.

In an attempt to discover "why" these students of uniformly high abilities followed one curricular direction rather than another,. the 25 seniors were interviewed. Designed as an informal, open-ended discussion of their formal intellectual experience, the interviews focused on the origins and development of current educational and vocational plans.

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* Footnotes will be found at the end of the article.

TABLE I

CHOICE OF MAJOR

Major	Pre-Matriculation Choice		Final Choice	
Arts and Humanities	7	(3)	20	(12)
History and Social Sciences	5	(3)	10	(4)
Sciences and Engineering	33	(18)	18	(9)
Uncertain	3	(1)		
Total Study Sample	48	(25)*	48	(25)*

* Numbers of Seniors interviewed (Class of 1960) are shown in parentheses.

TABLE II

CAREER GOALS BEFORE AND DURING COLLEGE

Field	Career Choice Before College	Career Choice Now: Humanities and Social Science Majors	Career Choice Now: Science and Engineering Majors
Law	3	7	-
Medicine	4	3	1
Science or Engineering	12	-	5
Business	1	-	-
College Teaching	1	2	-
Ministry	1	1	-
Uncertain	3	3	3
Total	25	16	9

TABLE III

ATTRACTIVENESS OF MAJOR*

Reasons Given	Sixteen Humanities and Social Science Majors	Nine Science and Engineering Majors
Broad enough to allow for other electives	4	-
Developing earlier interests	2	5
Good teaching	2	1
Embraced concerns of all others (History)	2	-
Disillusionment with other fields	1	3
Possibility for original contribution	-	1

* Number of responses rather than number of students.

These semi-structured sessions, varying in length from 20 minutes to an hour, sought information relative to questions such as the following:

(1) What were your vocational goals before college?
(2) Were these reinforced or discouraged by your parents? By your teachers? By other acquaintances?
(3) At college were you attracted to (undergraduate major) because of subject content, quality of instruction, or other factors?
(4) What courses of study have you liked least? Why?
(5) Has semester or summer employment helped to crystallize your career plans?
(6) Has counseling at college been a significant influence in your choices?
(7) How do you expect to use your undergraduate training?
(8) In broad overview what person(s) has had the greatest impact on your career thinking?
(9) If you were beginning again, would you do things differently?
(10) Do you think you would have chosen differently at another college?
(11) Are you generally satisfied with your educational and career choices to date?

Since most subjects in this sample seemed to think in terms of a Humanities-Science dichotomy, their comments have been grouped accordingly. It will be apparent, however, that small numbers preclude sweeping generalizations. Examination of certain responses (Table II) reveals a variety of career goals, both before and during college. As has been observed frequently, there was a noticeable shift away from Science and Engineering and, in this sample, a trend toward Law or slightly greater career uncertainty.

Parents, high school teachers, and counselors continued to be the main influences on the student's *pre-college* educational and career plans. Few reported experiencing a direct push from their parents toward a specific educational or vocational goal, but nearly all recognized some kind of subtle or covert influence that "probably rubbed off indirectly."

Table III suggests that choice of major for this sample was more a function of subject content than methodology or techniques. Humanities and Social Science majors took comfort in the opportunities for broad, free-ranging intellectual adventure while Science majors were most often following through on interests stimulated initially in earlier work in school. For many, the attractiveness of the Humanities and Social Sciences was the practical consideration that these fields were "broad enough to keep the largest number of avenues open."

Semester or summer work experience had not been a significant factor in shaping the educational choices of the sample, though a few mentioned its value as a "reality testing" device. Seeing what the actual outside world of work is like caused a few shifts of emphases *within* fields (e.g., from applied to theoretical interests), but almost no changes *between* fields have occurred as a result of these experiences.

Less than one-fourth of the sample found counseling or advising an important factor in their curricular and career choices, which reinforces other impressions that this highly able group is typically self-sufficient when educational decisions are to be made. In talking with these men, one comes to realize that they are not only highly able but also are equally stable and independent in their overall orientation to daily life. Time after time there was evidence that their choices were products of personal thought and introspection rather than the issue of a single influence or event.

When asked if they would do things differently, given another chance, nearly all indicated they would probably choose the same department or area again. Representative of their general feeling is the following: "I would still stay in . . . , though probably change a few of my courses in that department. Also, I would try to take a few more courses outside the department. It bothers me a little that it's a pretty secular program."

A large proportion of the 25 interviewed expressed regret at the "heavy specialization requirements" in most majors and further lamented that "there is no premium on the versatility of knowledge." A few expressed interest in broader, if not deeper, knowledge, and one felt a four-year Directed Studies Program might be a useful addition to Yale offerings.

Scientists in the sample were frequently critical of laboratory report writing, labeling it onerous, overdone, and just plain busy work. Some reported that it had had a negative, stultifying impact on their intellectual interests and outlook.

Members of the sample felt they would have majored in the same or closely related subjects at another institution, and, the above exceptions notwithstanding, nearly all expressed general satisfaction with their overall college experience.[4] A sampling of their spontaneous comments provides a final touch of flavor:

> Freshmen need more of the better teachers. As things now stand, you finally get a big man at the end of Junior year; and just when your intellectual excitement gets underway, graduation arrives. (Humanities Major)

> There is too little concern for the "teaching" role. Some junior men would make excellent teachers if they were not under the terrific scholarship role, producing a book between two covers that ends up on somebody's shelf and is never read. (Humanities Major)

> The atmosphere is definitely toward the liberal arts. There's a hierarchy of English honors majors at top, then History honors majors, English standard majors, and so on. In the dining hall, for example, you sense this as you sit at the table. (Mathematics Major)

> Science majors are at a disadvantage when it comes to classroom hours. My 26 hours per week in the lab can be contrasted with the 12 hours of my non-science friends. (Chemistry Major)

Concluding Comment

One is impressed with the variety of reasons given for their decisions by these very able students, by the shifting from earlier plans, and by the deterioration in number of prospective Science and Engineering majors; but fundamentally, the satisfactions expressed by these extremely able students are much more impressive than the shifts in plans or dissatisfactions. They were offered freedom of choice, and on the whole they found major programs which were intellectually satisfying.

In summary, these extremely able undergraduates appeared to be stable, self-sufficient individuals who chose their college majors independently of extraneous considerations and primarily on the grounds of likelihood for maximum intellectual fulfillment. By virtue of balance in the distribution of their high level talents, they were really free to choose any program of concentration. Colleges and universities should have more such students, and in turn they must recognize the obligation to provide commensurate challenges and opportunities in all areas for the uniformly able students, particularly those of high ability.

FOOTNOTES

1. Earlier studies on related topics were the following two:
   A. B. Crawford, "Survey of Students' Elections in Science," 1939 (Mimeo).
   A. B. Crawford and Paul S. Burnham, "Science Students in the Class of 1957," Research Division, Office of Counseling, Placement and Research, Yale University, 319 pp., 1958 (Mimeo).
2. Range of CEEB scores for members of the sample, 666-800; means on two verbal tests, 720, and on two quantitative tests, 728.
3. The five drop-outs (Class of 1959) were accounted for by accidental death, switch to a five-year engineering program, medical leave of absence, low standing, and resignation to go to work.
4. Similar satisfactions were reported by Class of 1957 seniors (Yale) interviewed in an earlier study (Crawford and Burnham, op. cit., pp. 25-26).

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COLLEGE SCHOLASTIC PROGRESS PATTERNS AS PREDICTIVE INDICES FOR COUNSELING

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THE PROBLEM of being misled by predictive information is especially important to American higher education at this critical period of rapid expansion. Prospective and currently enrolled college students need realistic counseling in regard to their college plans. This is a report of the development of some college scholastic progress patterns which may be more valid and more useful as predictive information for counseling than that which is presently available.

The basic idea underlying the development of this information is that of describing the actual in-college performance of former students of a college and then using this description as a pattern for the expected progress of prospective or currently enrolled students of that college. The description of former students was obtained by selecting various homogeneous groups of former students and then charting the progress of each group over a four semester period. The progress of each group included both an achievement aspect and a persistence aspect. Achievement is shown by the proportion of each group in each of four grade-point average ranges. The persistence aspect is shown by the proportion of each group leaving at various times over a two year period. Whether or not these departures are voluntary is also shown.

The development of these progress patterns began with two basic premises: 1) that the two factors most significantly related to college scholastic progress are previous academic achievement and scholastic ability; and 2) that the scholastic progress made by prospective or currently enrolled students of a college will be essentially the same as progress made by previously enrolled students of that college.

Many studies have reported the relationship of the two factors, ability and previous achievement, to college grade-point averages. Travers[1*] has reviewed predictive studies of this kind at all educational levels, and Garrett[2] has done so for predictions in liberal arts colleges.

An aspect of progress other than college grade-point average, however, is that of staying power or, stated negatively, tendency to leave college. Table I presents some evidence to show the significance of the relationship of the two factors, ability and previous achievement, to staying power or tendency to leave college. In Table I, consider the men of low scholastic promise, that is, those who scored among the lowest third on the College Qualification Test and who earned less than a C average the first semester: 29.2% of this group left voluntarily before the junior year as compared with 16.9% of the men with high scholastic promise; likewise 54.6% of the low scholastic promise group was dropped as compared with only 1.2% of the high scholastic promise group. The effect of previous achievement and scholastic ability on departures is also shown for the women. In the case of women, however, ability and previous achievement have little effect upon voluntary departures.

Evidence in support of the second premise, concerning the relationship of the progress of currently enrolled students to former students, is presented in Tables II and III. Table II shows the similarities from year to year for the grade-point average aspect of progress. There was little variation in mean grade-point averages from year to year over a 10 year period. For example, consider the second column in Table II. This column shows 10 different groups of freshman men in the College of Letters and Science, each group being present for the second semester in the year shown. The range of the mean grade-point averages shown in the third column is 2.22 to 2.32. There is no trend upward or downward in terms of grade-point average, but there is an upward trend in the size of the groups, reflecting enrollment increases. Each of these groups is, of course, quite heterogeneous in respect to academic background, scholastic ability, and many other factors. The columns for sophomores, juniors, and seniors similarly show little variation in mean grade-point averages from year to year. Furthermore, differences between the mean grade-point averages of the four classes represented are essentially the same from year to year. In each year, for example, the sophomores earned higher grades than freshmen, juniors higher than sophomores, and seniors higher than juniors.

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* Footnotes are to be found at the end of this article.

Table III shows the similarities in departures from year to year by comparing a 1958 and a 1959 entering group. The basic patterns of departure are essentially the same, and differences in kind and time of departures are slight. For example, in each year the greatest exodus was after the second semester, and the dropped and voluntary departures are about equal, there being a slightly higher proportion leaving voluntarily than being dropped.

Accepting the two basic premises previously discussed, scholastic progress patterns were developed from the records of former students of the College of Letters and Science at the University of Wisconsin for use with students currently enrolled in that college. Some 9,000 new undergraduate students entered the University of Wisconsin in September of 1958 and 1959. Data regarding test scores, credits carried, grade-points earned, nature of departures, and other information were obtained for these students. All freshman men with no previous college record who first entered the College of Letters and Science and completed the first semester were selected from these 9,000. Those excluded were all women and those men who had had some previous college work, who had entered some college or school of the University other than the College of Letters and Science, or who had registered for but had not completed the first semester. A very few were excluded because they had not taken the College Qualification Test. This selection procedure resulted in a total of 1,924 students.

The progress of this group of 1,924 men students is shown in Chart I. The group is homogenous in respect to sex, previous level of education, and general educational plan. However, it is quite heterogeneous in regard to high school rank, first semester grade-point average, scholastic ability, and, of course, individual characteristics.

Chart I shows the progress of this group through four consecutive semesters, each circle representing a semester. The achievement aspect of progress is shown by the proportion of the group achieving in each of four grade-point average ranges in each of four consecutive semesters. The solid areas show the honor range, the two dotted sections the average range, and the lined areas the unsatisfactory range. The clear area represents the proportion of the original group not completing that semester. The departure aspect of progress is shown by the figures below each circle. These figures are percentages of the original number of 1,924 men and show when the departures occurred and whether or not they were voluntary.

Each circle in Chart I is designed to show proportions of a group of students in respect to both the original entering group and to that part of the original group completing each semester. In order to illustrate this dual reference of each proportion, consider the circle in the lower right hand corner, representing the fourth semester. Visual inspection shows that a little less than two-thirds of the original group completed the fourth semester. The proportion achieving in the 3.00 to 4.00 GPA range, the solid section, can be seen both in relationship to the original group and to the group which completed four consecutive semesters. In reference to the original group, the solid area takes up less than a fifth of the area of the circle. In reference to the group which completed four semesters, the figure, 29.6, shows that over one-fourth achieved in this range.

The proportion in the 3.00 to 4.00 grade-point average range, represented by the solid area, can be traced through the four semesters. Note that, in reference to the original group, the proportion is fairly constant but in reference to the group completing each semester, the proportion increases. This reflects the observation that most of the students who do well the first semester not only continue to do well but also stay on in college. In like manner, the proportion in the 0.00 to 1.99 grade-point average range, represented by the lined areas, can be traced through four semesters. In this case, the proportion decreases in terms of both its reference to the original group and its reference to the group completing each semester. This reflects the observation that most of the students who earn less than a C average the first semester leave college early and that those who continue tend to raise their grades.

A comparison of the figures in the sections of the circle for the first semester with those in the circle for the fourth semester illustrates the significance of persistence or staying power. The group completing four semesters earned higher grades in the fourth semester than the larger, total group did in the first semester. This is partly the result of the departures of the less promising students and partly improvement in grades on the part of some of the students who continued.

The departure aspect of progress is shown by the percentages of the original number leaving at various times over a four semester period. Consider the figures shown below the circle for the first semester. The 1,924 men were selected on the basis of their having completed the first semester, and accordingly none left either before or during the first semester. Between the end of the first semester and the beginning of the second semester 5.1% left voluntarily and 2.2% was dropped. These percentages, 5.1% and 2.2%, are also shown in the set of figures under the circle for the second semester. Below the second semester circle it can be seen that an additional 3.0% left voluntarily during the semester and 0.4% was dropped during the semester. After the second semester and before the beginning of the third semester, another 8.4% left voluntarily and another 11.2% was dropped. The figures after "total" show the cumulative effect of departures. Before the beginning of the third semester, 16.5% of the original group had left voluntarily and 13.8% had been dropped. Thus 30.3% of the original group had left before the third semester. Note that Summer Sessions are not accounted for. Departures shown as "after" include those that occur at any time between the close of one semester and the beginning of the next whether or not summer session attendance was involved.

The clear section in each circle shows the proportion of the original group not completing that semester. The actual percentage of the original group not completing the semester can be determined by adding together the four figures after the words "before" and "during". Thus these four figures under the circle for the first semester add up to zero, and there is no clear section in the circle. Under the circle for the second semester, the four figures (5.1, 3.0, 2.2, and 0.4) add up to 10.7%. The clear section represents this 10.7% of the original group. The figure of 10.7% is omitted from the circle so as not to confuse it with the figures in the shaded sections.

Very few students left during any semester. Voluntary departures occurred more than departures resulting from dropped actions. More departures occurred after the second semester than at any other time. Before the beginning of the fifth semester, normally the beginning of the junior year, 25.3% had left voluntarily and 21.4% had been dropped, thus making a total of 46.7% of the original group having left before the junior year. No account is given as to whether or not these students who left continued their college education elsewhere or whether or not they returned to the University of Wisconsin campus at some later time. The student who transfers from the College of Letters and Science to some other school or college within the University of Wisconsin after his first registration is nevertheless considered as being in the College of Letters and Science for the purposes of this analysis.

Charts II and III are designed exactly like Chart I but show the four semester progress of smaller groups selected from the 1,924 students represented in Chart I. These smaller groups were selected on the basis of previous academic achievement and scholastic ability.

Chart II shows the progress of the 266 students selected from the 1,924 on the basis of their having earned grades in the 3.00 to 4.00 grade-point average range the first semester and who also scored among the highest third of University of Wisconsin freshman men on the College Qualification Test. As would be expected, this more promising group not only earned higher grades but also a much larger proportion of them completed four consecutive semesters than was so for the total group of 1,924.

In order to illustrate the use of the prediction information in Chart II, assume that a student is being counseled during his second semester and that this student earned a grade-point average his first semester in the 3.00 to 4.00 range, and scored among the highest third of Wisconsin freshman men on the College Qualification Test. With this information, the counselor could make some reasonable predictions regarding the student's most likely progress. The probabilities are, for example, that this student will achieve in the same range as did the majority (68.6%) of the former group. The probabilities are even greater that he will earn a 2.50 grade-point average or above because 89.5% of this former group of like ability and achievement did so. It is almost certain that he will make at least a C average because 99.2% of this former group did so. Furthermore, it is unlikely that this student will leave during this second semester or even after its completion. None of the former group left during the semester and only 5.3% left after completing it. It is almost certain that he will not be dropped. In brief, the probabilities are that he will continue to do well and stay on in college. If, however, the counselor knows that this student is doing very poorly the second semester, then he will know that this is an unusual case and can begin to search for unusual factors which may be contributing either to his poor performance or his contemplated departure from the University.

Chart III shows the progress of another group of former students, a group of men who earned less than a C average the first semester and scored among the lowest third of entering Wisconsin freshman men on the College Qualification Test. Now consider the case of a student being counseled during his second semester, but this time it is a student who earned less than a C average the first semester and scored among the lowest third on the College Qualification Test. The probabilities are that this student will again earn less than a C average and that he will leave the University early in his college career; 65.3% of the former group attending the second semester earned less than a C average this second semester and by the end of the fourth semester 83.8% had left. Suppose, however, that this same student was being counseled during his fourth consecutive semester. He would then be among the minority who "survived." Most of the former group of "survivors" completed the fourth semester satisfactorily, and 20% earned a B average or higher.

Charts I, II, and III are three of 40 such charts which will be incorporated into a manual, "Progress Patterns for Counseling." Each of these 40 groups will be selected according to sex, previous academic achievement, and scholastic ability. Twenty of these charts will be based on high school achievement and ability and 20 on first semester college achievement and ability. This will permit use of the manual for both prospective and currently enrolled students at the University of Wisconsin.

Counselors vary considerably in their use of predictive information. At one extreme are those who believe that predictive information interferes with counseling relationships. At the other extreme are those who focus on objective data with little concern for feelings and attitudes. Most counselors recognize the significance of both the feelings and the objective data. Drake and Oetting[3] have described this middle ground in their discussion of the use of psycho-metric data in counseling. The manual, "Progress Patterns for Counseling," is being developed for use in counseling situations. This manual will, of course, be limited to use with prospective or currently enrolled students of the College of Letters and Science, University of Wisconsin. Counselors at Wisconsin will be introduced to this manual for use on a trial basis. Experience with it may result in some substantial revisions. In the meantime, others may find that progress patterns of similar design may be helpful to counselors at their institutions.

Summary

Scholastic progress patterns, developed from the records of former students, could be used as predictive information in counseling with prospective or currently enrolled students of that college. These patterns were developed from two basic premises. One is that previous academic achievement and scholastic ability are significantly related to progress. The other is that the scholastic progress made by prospective or currently enrolled students of a college will be essentially the same as progress made by previously enrolled students of that college. Evidence to support these premises is in published reports and in the records of former students at the University of Wisconsin. Examples of progress patterns for three different groups show how progress can be described and used in counseling situations. Patterns of this kind will be used in some counseling situations at the University of Wisconsin on a trial basis.

FOOTNOTES

1. R. M. Travers, "Significant Research on the Prediction of Academic Success," in Wilma T. Donahue (Ed), The Measurement of Student Adjustment and Achievement, (Ann Arbor: University of Michigan, 1949), pp. 147-190.
2. H. F. Garret, "A Review and Interpretation of Investigations of Factors Related to Scholastic Success in Colleges of Arts and Sciences and Teachers Colleges," Journal of Experimental Education, XVIII (1949), pp. 91-138.
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TABLE I

DEPARTURES BETWEEN END OF FIRST SEMESTER OF FRESHMAN YEAR AND BEGINNING OF FIFTH CONSECUTIVE SEMESTER ACCORDING TO SCHOLASTIC PROMISE AND SEX, FOR UNDERGRADUATES COLLEGE OF LETTERS AND SCIENCE, ENTERING IN SEPTEMBER, 1958 OR 1959

Scholastic Promise	Departures as Percentages of N					
	Voluntary		Dropped		Total	
	Men	Women	Men	Women	Men	Women
High Scholastic Promise *	16.9	38.0	1.2	0.0	18.2	38.0
Low Scholastic Promise **	29.2	41.2	54.6	45.0	83.8	86.2
TOTAL ***	25.3	41.6	21.4	12.5	46.6	54.1

* High scholastic promise: students who earned a 3.00 G.P.A. or above the first semester and ranked among the highest third of entering University of Wisconsin freshmen of their sex on the College Qualification Test. Number of men: 266; number of women: 332.

** Low scholastic promise: students who earned less than a 2.00 G.P.A. the first semester and ranked among the lowest third of University of Wisconsin freshmen of their sex on the College Qualification Test. Number of men: 408; number of women: 340.

***Total: all new freshmen of the College of Letters and Science who completed the first semester beginning in September 1958 or September 1959. Number of men: 1,924; number of women: 2,022.

TABLE II

GRADE-POINT AVERAGES OVER TEN-YEAR PERIOD FOR UNDERGRADUATE MEN ENROLLED SECOND SEMESTER, COLLEGE OF LETTERS AND SCIENCE*

Year	Freshmen		Sophomores		Juniors		Seniors		Total	
	No.	GPA	No.	GPA	No.	GPA	No.	GPA	No.	GPA
1952	765	2.28	720	2.55	714	2.71	825	2.79	3024	2.58
1953	980	2.31	714	2.62	609	2.75	759	2.84	3062	2.60
1954	923	2.29	906	2.64	576	2.78	647	2.86	3052	2.61
1955	860	2.29	919	2.54	719	2.76	649	2.81	3147	2.58
1956	894	2.27	908	2.57	688	2.70	775	2.86	3265	2.58
1957	827	2.28	894	2.50	657	2.63	775	2.78	3153	2.54
1958	825	2.32	827	2.51	629	2.63	742	2.81	3023	2.56
1959	989	2.22	846	2.50	626	2.70	707	2.79	3168	2.52
1960	1144	2.28	960	2.51	600	2.60	696	2.80	3400	2.51
1961	1412	2.30	1094	2.54	784	2.67	698	2.83	3988	2.53
GPA Range	2.22-2.32		2.50-2.64		2.60-2.78		2.78-2.86		2.51-2.61	

*Source: Undergraduate Student Scholarship Records, Office of the Registrar, The University of Wisconsin, Madison.

TABLE III

DEPARTURES DURING FIRST FOUR CONSECUTIVE SEMESTERS, SEPTEMBER 1958 AND SEPTEMBER 1959 ENTERING FRESHMAN MEN, COLLEGE OF LETTERS AND SCIENCE

When Departures Occurred	Departures as Percentages of N*					
	Voluntary		Dropped		Total	
	1958	1959	1958	1959	1958	1959
After First Semester**	5.7	4.5	2.0	2.5	7.7	7.0
After Second Semester	12.6	10.5	12.5	10.6	25.1	21.1
After Third Semester	3.7	3.4	5.3	5.3	9.0	8.7
After Fourth Semester	4.9	5.6	2.8	2.1	7.7	7.7
TOTAL	26.9	24.0	22.6	20.5	49.5	44.5

* N for 1958 group is 874; N for 1959 group is 1050.

** After: any time from the beginning of one semester to the beginning of the next. This includes both those who left during a semester and those who left between the end of one semester and the beginning of the next. Summer Session attendance is not accounted for.

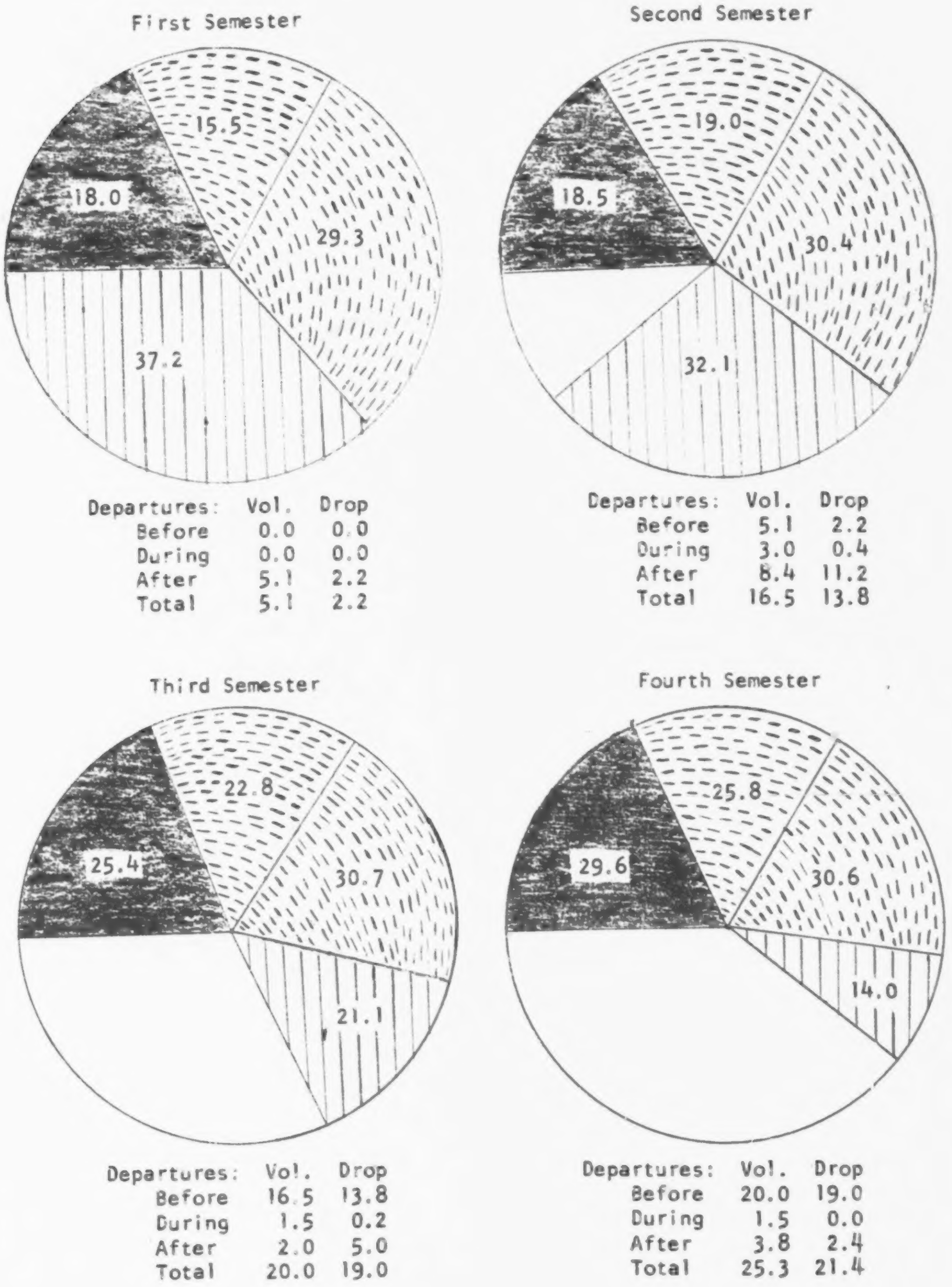
CHART I

PROGRESS MADE DURING FIRST FOUR CONSECUTIVE SEMESTERS BY STUDENTS WHO FIRST ENTERED THE COLLEGE OF LETTERS AND SCIENCE UNIVERSITY OF WISCONSIN, SEPTEMBER 1958 OR 1959 AS NEW FRESHMEN

KEY: Areas: solid, 3.00 - 4.00 GPA; dotted, 2.00 - 2.99 GPA (line at 2.50); lines, 0.00 - 1.99 GPA; clear, those not completing that semester.

Numbers: Those in areas are percentages of number completing that semester. Those for departures are percentages of number of original group.

ORIGINAL GROUP: 1,924 men; all freshmen completing first semester.



First Semester

Departures:	Vol.	Drop
Before	0.0	0.0
During	0.0	0.0
After	5.1	2.2
Total	5.1	2.2

Second Semester

Departures:	Vol.	Drop
Before	5.1	2.2
During	3.0	0.4
After	8.4	11.2
Total	16.5	13.8

Third Semester

Departures:	Vol.	Drop
Before	16.5	13.8
During	1.5	0.2
After	2.0	5.0
Total	20.0	19.0

Fourth Semester

Departures:	Vol.	Drop
Before	20.0	19.0
During	1.5	0.0
After	3.8	2.4
Total	25.3	21.4

CHART II

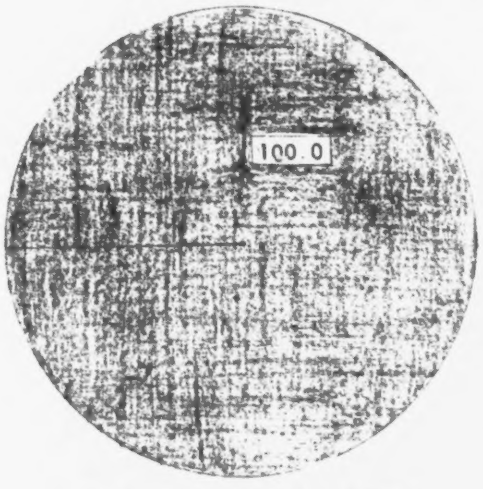
PROGRESS MADE DURING FIRST FOUR CONSECUTIVE SEMESTERS BY STUDENTS WHO FIRST ENTERED THE COLLEGE OF LETTERS AND SCIENCE UNIVERSITY OF WISCONSIN, SEPTEMBER 1958 OR 1959 AS NEW FRESHMEN

KEY: Areas: solid, 3.00 – 4.00 GPA; dotted, 2.00 – 2.99 GPA (line at 2.50); lines, 0.00 – 1.99 GPA; clear, those not completing that semester.

Numbers: Those in areas are percentages of number completing that semester. Those for departures are percentages of number of original group.

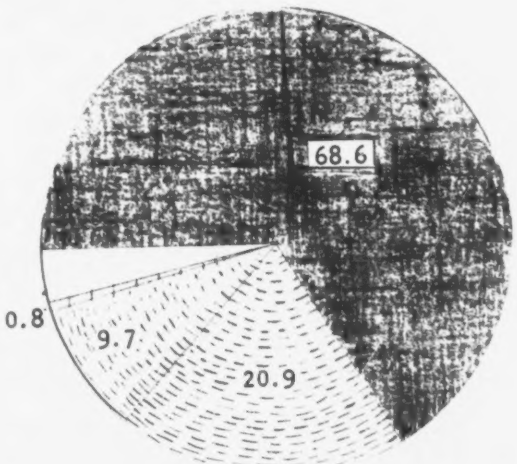
ORIGINAL GROUP: 266 men; 1st sem. GPA 3.00 – 4.00; CQT upper third.

First Semester



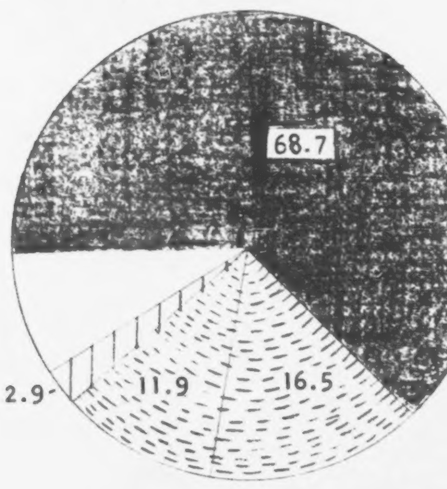
Departures:	Vol.	Drop
Before	0.0	0.0
During	0.0	0.0
After	3.0	0.0
Total	3.0	0.0

Second Semester



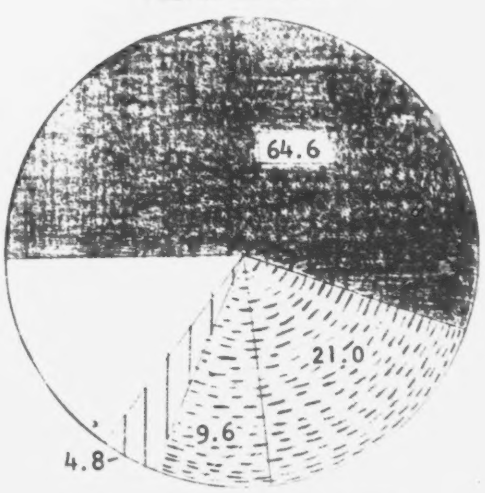
Departures:	Vol.	Drop
Before	3.0	0.0
During	0.0	0.0
After	5.3	0.0
Total	8.3	0.0

Third Semester



Departures:	Vol.	Drop
Before	8.3	0.0
During	0.4	0.0
After	3.3	0.4
Total	12.0	0.4

Fourth Semester



Departures:	Vol.	Drop
Before	12.0	0.4
During	1.5	0.0
After	3.4	0.8
Total	16.9	1.2

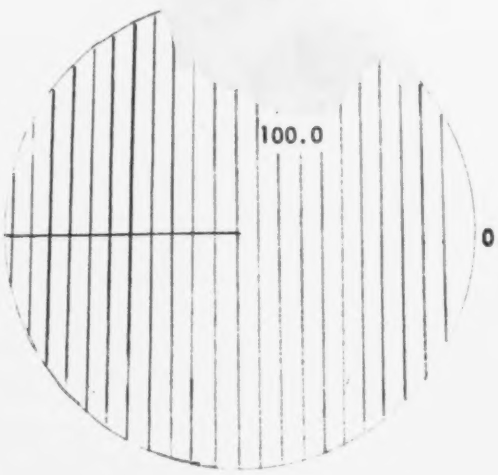
CHART III

PROGRESS MADE DURING FIRST FOUR CONSECUTIVE SEMESTERS BY STUDENTS WHO FIRST ENTERED THE COLLEGE OF LETTERS AND SCIENCE UNIVERSITY OF WISCONSIN, SEPTEMBER 1958 OR 1959 AS NEW FRESHMEN

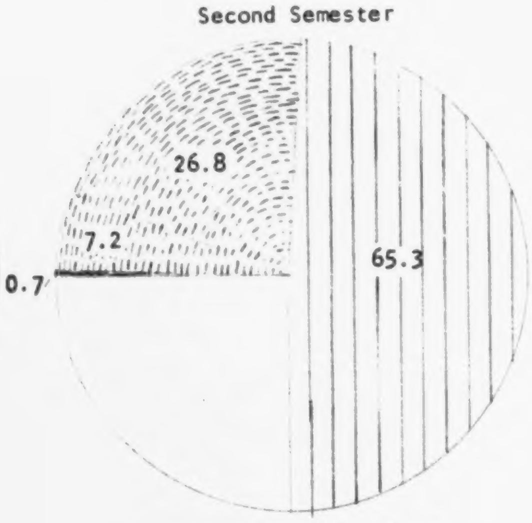
KEY: Areas: solid, 3.00 – 4.00 GPA; dotted, 2.00 – 2.99 GPA (line at 2.50); lines, 0.00 – 1.99 GPA; clear, those not completing that semester.

Numbers: Those in areas are percentages of number completing that semester. Those for departures are percentages of number of original [illegible].

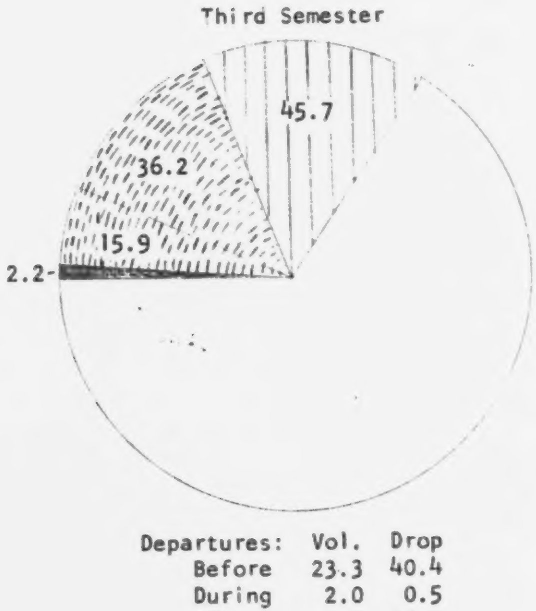
ORIGINAL [illegible] 1st sem. GPA 0.00 – 1.99; CQT lower third.



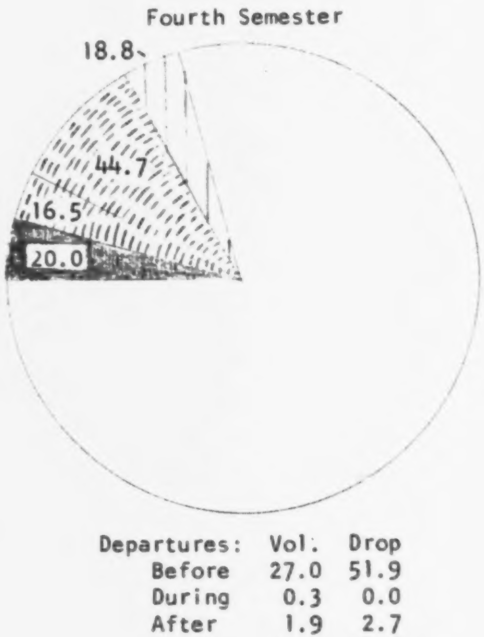
Departures:	Vol.	Drop
Before	0.0	0.0
During	0.0	0.0
After	9.1	8.3
Total	9.1	8.3



Departures:	Vol.	Drop
Before	9.1	8.3
During	6.3	1.3
After	7.9	30.8
Total	23.3	40.4



Departures:	Vol.	Drop
Before	23.3	40.4
During	2.0	0.5
After	1.7	11.0
Total	27.0	51.9



Departures:	Vol.	Drop
Before	27.0	51.9
During	0.3	0.0
After	1.9	2.7
Total	29.2	54.6

THE JOURNAL OF EXPERIMENTAL EDUCATION
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PREDICTING MEDICAL SCHOOL SUCCESS: A TEN-YEAR STUDY

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THE PROBLEM of predicting success in medical school has received considerable attention particularly during recent years. Gottheil and Michael(4) have made the most extensive study of studies with their review of the research on the topic. They concluded that psychological tests are the most promising means for predicting which students will succeed in medical training.

The present authors feel this conclusion should be carefully examined lest the implications and certain fundamental assumptions be clouded over or forgotten. A primary concern facing any educator who is responsible for selecting students for any training program is the ability to estimate as accurately, and as early as possible, the probability that a candidate will succeed or fail. Furthermore, devices used to select the potentially successful students need to meet the criteria of economy, practicality, and reliability of differentiating "successes" from probable "failures."

The results of 10 years' work at the University of Buffalo on the prediction issue have convinced the authors that a workable solution to this problem may indeed be in the direction suggested by Gottheil and Michael, but may also be more readily available than previously believed. Our findings and their implications are presented in the hope that they may stimulate others toward new viewpoints on the issues.

Phase I: 1949

In this initial pilot study the relationship of pre-med grades in sciences (biology, physics, and inorganic and organic chemistry) with grades received during the freshman year in medical school was examined. The pilot research sample consisted of 54 students who had done their pre-medical work at the University of Buffalo's College of Arts and Sciences and then went on into the University's Medical School. The correlation found between the basic science grades and freshman medical school grades was .75, which indicated a very intimate and respectable relationship.

Since science course grades are usually easily available, this finding suggested that we may have discovered a potentially very practical and useful predictor variable which can be used for cross-validation at other schools.

Scores on the Medical College Admissions Test were then examined to determine their relationship to first-year grades in medical school. On three of the test's four scales ("Q," "Verbal," and "Social Organization") the correlations were very low (.25, .03, and .28 respectively). All of this indicated practically no usable relationship for individual predictions. With the fourth scale, "Science," a correlation of .42 was obtained. Although this correlation does suggest a relationship, it does not approach that of the previously found relationship with grades from required science courses; nevertheless, we wondered if it might not be possible to combine science course grades with the science sub-test score to produce an improved predictor. The statistical work revealed that the test scores were highly correlated with grades and did not add significantly to produce a better predictor.

These findings tentatively suggested that perhaps one of the most easily available and "objective" measures for prediction was also the best one. However, educational and psychological information made us reluctant to accept such evidence without considering other variables that might increase predictive accuracy.

Phase II: 1952

The second phase focused on the subjective evaluation made by the Pre-Medical Appraisal Committee of each candidate. For many years it has been the practice at the University of Buffalo to obtain subjective ratings by various personnel of all pre-medical students. This work is done by a committee of four: three from the departments of Chemistry, Physics, and Biology plus a Chairman from the Office of the Dean of Students. Each of the three science departments has a card rating system whereby all medical school candidates are rated by their lecture professors and laboratory assistants. The committee chairman interviews each student and also has access to the opinions of counselors, administrative officers in the Student Union and Head Residents in the dormitories.

During his pre-med work, each student is rated on a four-point scale in the following four areas: general impression and personality, emotional adjustment and stability, creative experimental interest, and industry. At the close of his pre-medical studies, an appraisal is made of each candidate in a meeting of the entire committee and each candidate is rated for medical school acceptance as either strongly recommended, recommended, average, or not recommended.

In this investigation, we compared the subjective evaluations of candidates with their success (defined as average or better course grades) in first-year medical school. The sample consisted of 81 students who had been evaluated by the science departments and the Appraisal Committee. The findings revealed a relationship between the overall committee appraisals and success in medical school. Stated in the form of prediction probabilities, the chances for success in the first year of medical school of those candidates rated as "strongly recommended" or "recommended" were eight to one in their favor. The probability of success for those candidates rated as "average" was three to one. None of the students given a "not recommended" rating was accepted for medical school.

Although the overall Appraisal Committee ratings were related to medical school grades, individual department ratings were not. In other words, the subjective personality evaluations made by the individual observers bore no significant relationship to later success or failure in medical school. This suggested that the Appraisal Committee was using something which was not being used by the individual observers, or which was not contained in the "personality" data.

In searching for an explanation of these findings, correlations were run between the Appraisal Committee's recommendations and many variables available to them, e.g., number of high-school activities, regents average, fifth in high school, grade-point average in pre-med studies, educational level of parents, service record, college aptitude test scores, anxiety test index, etc. The surprising finding was that the only respectable correlations obtained were between committee recommendation and 1) regents average (.69), and 2) college grade-point average (.68). In spite of the fact that grades were not the committee's primary concern, it was evident that a student's committee approval was more closely associated with his marks in high school and pre-med studies than with any other variable. Since Phase I three years earlier had shown substantially the same thing in principle, by this time we were really wondering if grades were the only variable that was related to medical school success. Hence, attention was turned to a more thorough investigation of these variables.

Phase III: 1958

For this part of the project, the pre-medical and medical school records were accumulated on 240 medical students who had done their pre-med work at the University of Buffalo and were at that time beyond their first year of medical school. These students were then divided into three groups: 1) above average med school grades, 2) average grades, and 3) below average. Next, all background variables on which data were available were examined for their relationship to medical grades; these included high-school activities, number and kinds of hobbies, father's and mother's occupational level, father's occupation, foreign language background, position in the family, number of siblings, family income, and high-school job history.

There were no significant differences among the three groups on any of these background variables. It apparently did not matter what the socioeconomic background or extra-curricular history of the student had been because his marks in medical school might be randomly poor, average, or excellent. Consequently, the search for background factors related to degree of success within medical school revealed no relevant highly correlated variables.

At this point it was decided to study the possibility of moving predictions of success or failure forward in time to the beginning of pre-med work. Our most recent investigation, therefore, gathered data on the feasibility and possible value of earlier prediction.

Phase IV: 1960

This phase of the work was designed to focus on the entering undergraduates aspiring to be physicians. Since the prediction problem is similar in principle for dental as well as medical candidates, it was decided that both of these specialities could be used and compared. Consequently, a sample of 101 students who had enrolled in a pre-medical or pre-dental curriculum upon entering college was selected.

Fifty-nine of these students had classified themselves in 1954 as pre-medical and 42 listed themselves as pre-dental. Each was followed up in 1959, which was five years after entering; ample time therefore was allowed for practically all of them to have achieved entrance to either professional school.

The findings were quite unexpected. Only 10 of the pre-medical students achieved the goal of admission to medical school. The situation with the dental students was somewhat similar; only 11 were admitted to dental school. Only half of the original group of students achieved any kind of educational goal; 45 percent discontinued their education completely, and the other five percent were still working on their bachelor's degree.

Implications and Conclusions

What have all these studies shown? Several things seem evident. First, the search for complicated psychological measures to predict medical school success may be a waste of time and resources; the psychology literature is loaded with studies attempting to use the Rorschach, Thematic Apperception Test, and various scales of the Minnesota Multiphasic Personality Inventory as well as other psychological tests to predict academic achievement, but as yet none has been reported to have a validity coefficient approaching that of the science course grades. From our experiences it appears that grades are more closely related to performance in medical school courses than are less objective and less easily obtained indices.

Grades in the required science courses appear to indicate most accurately what may be expected from a student in his medical school work. However, the finding that high-school regents grades are highly related to recommendations for medical school suggests that perhaps it isn't necessary to await college grades to make a very good prediction of a student's chances of success in medical school.

The fact that so few students who plan to go to medical school actually get there points up the need for early evaluation and appropriate guidance. But what seems to occur is that everybody views the college pre-medical studies as an academic "proving ground" to demonstrate the student's fitness for medical training. Operating from this framework, the Appraisal Committee provides for close observation of the candidate's progress during three or four years of college work and collects detailed ratings of various personality characteristics—all of which bear little or no relationship to eventual performance in medical school. Nevertheless, the Committee's overall evaluation made at the threshold of medical school has been shown to relate very well to performance in medical training. Why, we might ask, need the committee wait three or four years to make an evaluation that, while apparently valid, is based mainly on something available at a much earlier date? Why not appraise candidates before they have spent three or four years in preparation for a goal that three-quarters of them never achieve?

At this point, it may appear we are taking a naive approach to a complex problem; that we are saying the only thing of importance in selecting medical students is academic ability. Let us hasten to correct such a possible misinterpretation by suggesting what we think is a sensible solution to the prediction problem.

A well-known, highly regarded, and repeatedly found principle underlies our proposed solution. It is that the best indication of what a person will do in the future is what he has done in the past. For instance, if an individual has shown academic achievement in high school, he can be expected to show similar performance in college or in a graduate school. This principle is also one of the cornerstones for theorizing in the area of vocational development and counseling today. It is held to be valid for not just academic performance but for a person's entire "life style" as well and is used in psychodiagnostic work frequently.

There is considerable research evidence (1,3,6) to indicate that when intelligence (or academic ability) is held constant, the one factor which discriminates success and failure best is test-measured interest.

If our principle is valid and the research reliable, why must we push for complicated psychological instruments and why must we await the results of pre-med college work before making our predictions of success or failure for medical school? Rather, at the beginning of a student's college career, make an evaluation of his probable chances of success in medical school on the basis of his academic performance to date and his measured interest in the medical field. If the probability of success is high, encourage him to pursue his goal; if the probability is low, provide appropriate guidance immediately instead of three or four years later when the lack of interest or ability becomes painfully evident to the student as well as the school.

To the present authors it would seem that a pre-college evaluation on the ability-interest dimensions would be both practical and adequate. Skillful use of the Strong Vocational Interest Blank, for example, coupled with knowledge of the individual's academic potential shown by his past achievement, and a careful extrapolation of probable future behavior would yield a prediction of medical school success at a time when it would be of most value to the student and to those investing in his education. This shift in perspective combined with a clear awareness of the goal of prediction could clear the current fog of confusion and doubt.

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REASONS FOR ACADEMIC FAILURE

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"I LIKED COLLEGE--too bad I never bothered to open a book." That comment was made on a questionnaire returned to the College by a student who had been dropped for poor scholarship. It seems to symbolize the tragic waste of time and talent that is the annual toll of dismissals.

Why do students flounder and eventually sink in the academic seas? This is the eternal question that besets so many students, counselors, and administrators.

Background

Brooklyn College, now part of the newly organized City University of New York, is a municipal college supported by tax funds. The rather homogenous student body is, with few exceptions, drawn from the city, and more particularly, from the borough of Brooklyn. Most of the students are graduates of the New York City secondary schools and are admitted to Brooklyn College on the basis of their high school averages or a combined total of their high school average and college entrance examination scores.

Brooklyn College expects its students to maintain a "C" average. Those students whose records fall below "C" are warned and may be dismissed if they show no marked improvement.

Dismissal statistics of the College of Liberal Arts and Sciences, Table I, may be viewed against this general background of the standards expected of students. The statistics show that a higher proportion of men than of women have been dismissed. Furthermore, with two exceptions, more dismissals have been made in the sophomore year than any other year (see Table II). It has been the policy of the College to be somewhat more lenient with freshmen since the first year entails so many adjustments.

Of course, these statistics do not present the total picture of failure to meet academic standards. Additional students have been dropped at mid-year although these numbers were much lower than those in June. Also, many students dropped out of their own accord. Data of students who entered Brooklyn College in February 1953 and who withdrew from college showed that 51.2 percent had unsatisfactory records.[1] It is of interest to note that only 22 percent of the men and three percent of the women who applied to leave College indicated that they were dropping out because of lack of interest in or ability to cope with their studies.[2] Professor Eilenberg's study has also pointed out that of 631 students queried, 432 had some difficulty in making an academic adjustment to college.

The Purpose of the Studies

Even though the total number of dismissals has been small compared to the total enrollment, the College has felt an obligation to each student admitted. It was felt that with more detailed knowledge of the reasons for failure, perhaps some help could be provided to students in danger of dismissal. With this in mind, several studies were undertaken. The aim of the studies to be described was to try to determine the reasons for academic failure and to take appropriate steps in the light of the information gathered.

The Procedures

Studies were conducted using different sources of information. In one study, 45 students who had improved their records sufficiently so as to be free of academic warning were questioned as to their original inability to do successful college work. Eleven "reasons" for unsuccessful work were listed (Table III), and the students were asked to rank those reasons in order of importance as they felt they applied to themselves. The problems that confront students at a resident college, i. e., living away from home for the first time, do not exist here. On the other hand, some students find living at home at the time when they seek to be independent, very trying.

During the course of the semester in which a student receives an academic warning, his counselor calls him in with a view toward both helping the student and helping the administrative officers of the College by reporting on the student. An analysis of the counselor's reports on 331 such students, subsequently dismissed, indicates the following reasons for failure to do satisfactory work (Table V). Where more than one reason was cited, only the one that seemed most important was tallied

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[1] Jeanette H. Eilenberg, Brooklyn College, Class Portrait 1953-1957 (New York: Brooklyn College, 1959), p. 25.

[2] Ibid.

TABLE I

COMPARISON OF DISMISSALS WITH ENROLLMENTS IN THE SPRING OF EACH YEAR, 1952-61 COLLEGE OF LIBERAL ARTS AND SCIENCES

Year	Men			Women			Total		
	Total No. Enrolled	Dismissed		Total No. Enrolled	Dismissed		Total No. Enrolled	Dismissed	
		No.	%		No.	%		No.	%
1952	3790	155	4.1	4219	40	0.9	8009	195	2.4
1953	3561	108	3.0	4231	29	0.7	7792	137	1.7
1954	3723	177	4.7	4422	47	1.1	8145	224	2.8
1955	3512	175	4.9	4350	65	1.5	7862	240	3.1
1956	3413	125	3.6	4260	42	1.0	7673	167	2.2
1957	3453	89	2.5	4315	38	0.9	7768	127	1.6
1958	3211	126	3.9	4299	59	1.4	7510	185	2.5
1959	3272	100	3.1	4504	46	1.0	7776	146	1.9
1960	3383	130	3.5	4687	43	0.9	8070	173	2.1
1961	3562	123	3.5	4957	60	1.2	8519	183	2.1

TABLE II

DISMISSALS BY CLASS AND SEX IN JUNE OF EACH YEAR, 1952-61 COLLEGE OF LIBERAL ARTS AND SCIENCES

Year	Freshmen			Sophomores			Juniors			Seniors		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1952	63	18	81	55	15	70	27	7	34	10	--	10
1953	32	2	34	48	19	67	20	6	26	8	2	10
1954	102	21	123	48	19	67	24	5	29	3	2	5
1955	51	22	73	95	39	134	23	2	25	6	2	8
1956	30	7	37	58	28	86	26	6	32	11	1	12
1957	38	6	44	39	21	60	6	9	15	6	2	8
1958	37	10	47	62	36	98	26	12	38	1	1	2
1959	44	10	54	30	27	57	19	8	27	7	1	8
1960	40	7	47	57	25	82	27	10	37	6	1	7
1961	24	7	31	54	43	97	31	8	39	14	2	16

TABLE III

SURVEY OF STUDENT OPINION ON REASONS FOR FAILURE TO DO SATISFACTORY WORK

Reason	Frequency of Mention in Order of Importance										
	1	2	3	4	5	6	7	8	9	10	11
Poor Study Habits	12	10	6	1	1	--	1	--	--	--	--
Insufficient Study	9	5	5	6	--	--	1	--	--	--	--
Lack of Interest in Subjects	2	5	3	6	3	4	--	--	1	--	--
Emotional Problems	6	3	3	1	2	1	1	1	2	--	--
No Vocational Goal	6	3	2	2	2	1	--	--	--	--	--
Home Circumstances	2	5	--	--	3	--	3	--	--	--	--
Insufficient H.S. Preparation	2	2	3	--	2	1	1	1	--	2	--
Inadequate Study Facilities	1	2	2	3	4	--	--	--	--	--	--
Employment	2	--	3	2	--	--	1	2	--	--	1
Co-curricular Activities	--	2	1	1	2	1	--	2	--	--	2
Illness	3	1	--	--	1	1	--	2	1	1	1

TABLE IV

WEIGHTED RANK VALUE OF REASONS LISTED*

Reason	Value
Poor Study Habits	306
Insufficient Study	247
Lack of Interest	195
Emotional Problems	166
No Vocational Goal	150
Home Circumstances	108
Insufficient H.S. Preparation	102
Improper Study Facilities	101
Employment	79
Co-curricular Activities	72
Illness	70

* Each time a reason was listed as number 1 it was weighted 11 times; each time it was listed as number 2 it was weighted 10; etc.

TABLE V

REASONS FOR FAILURE AS INDICATED BY COUNSELING REPORTS

Reason	No. of Students Reported
Lack of Application--Poor Study Habits	80
Lack of Goals--Poor Motivation	47
Lack of Ability	44
Wrong Major Field or Course Choice	34
Employment or Financial Problems	33
Family Problems	32
Psychological-personal Problems	29
Poor Adjustment to College	17
Co-curricular Activities	8
Poor Health	7
Total	331

Recently a questionnaire was sent to 31 students who had been dropped in February of 1960. Some of the respondents had comments to make in addition to the replies to the specific questions. Some of the comments were as follows: "My trouble was that nothing bothered me. I liked College--too bad I never bothered to open a book"; "My low scholarship status was not due to any lack of ability to do the work. I took a very immature (and irresponsible) attitude toward my studies... My records show I got several A's and B's in certain subjects. These were subjects I liked and studied (and learned with a minimum of effort). The other subjects I just did not care for, and so I did not devote much time to them. Moreover, I gave too much of myself to other activities that were not important."

From the above, it seems that students can give quite dispassionate appraisals of themselves.

Implications for the College

(1) At the present time the criteria for admission are being examined in the light of student performance to determine whether any adjustment should be made in the weight given to the entrance scores. In view of the tax-supported nature of the institution, it is unlikely that any subjective factors can be given weight over and beyond the grade achievement in the secondary school and the entrance examination scores.

(2) In the very first days of their college experience, it would seem desirable that the students have explained to them the new study habits, both in quantitative and qualitative measures, that are necessary for them to succeed.

(3) The College has also established a Basic Skills Center where, at a nominal charge, students may take a course aimed at improvement of their reading and study skills.

(4) The Personal Counseling Program, a special subdivision of the counseling facilities at the College, seeks to help the student, through professional guidance, to work through his personal difficulties.

(5) If the student does not meet the academic standards of the College after effort has been made to help him perform at the level of his potential, dismissal may be a more meaningful educational experience. Sometimes the experience is painful, but for many it is the first time they have had to take a long, hard look at what they were doing. For some, dismissal may be a relief from the obligation of doing something which they themselves did not want in the first place.

At Brooklyn College, it has been the policy to give to any dismissed student, who has been away for a year and who seems to have greater maturity and a new seriousness of purpose, a "second chance" as a part-time, tuition-paying student. If he does well as a part-time student, he may be restored to full matriculation. Strange as it may seem, some of these students applying for readmission have indicated that their dismissal was the best thing that ever happened to them. The following is a quotation from an application for readmission:

> Although I at times realized that the day would eventually come when I would be asked to leave, I still could not fully comprehend that such a thing could and would happen to me and so it did. May I say that now I am truly sorry that this did not happen two years previous.....
>
> ....I have had plenty of time to see as well as to make comparisons between these two worlds, but most of all I have had time to think; time to reflect upon what has transpired in the past; what was, what will be, but most of all what can be for me.

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DEVELOPING UNIFORM DEPARTMENTAL GRADING STANDARDS IN A UNIVERSITY

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UNIVERSITY ADMINISTRATORS are frequently concerned with the problem of apparent differences in grading standards from department to department in the various schools of a university. Students may be given grades by one department differing considerably as a group from those given the same students during the same semester by another department. Efforts to remedy the situation through written instruction, faculty meetings, and other similar methods, are generally unsuccessful.

An attempt has been made by the Bureau of Institutional Research of Saint Louis University to develop a method pointed toward solving the problem. In essence, the method consists of a procedure for the analyses of data which quantifies the apparent inequities in such grading standards, and which does so in a manner understandable to the average teacher. Since the problem is a continuing one, it is essential that the procedures be repeated annually.

Quantifying Departmental Inequities in Grading Standards

The technique adopted for the analyses of data is basically a simplified and "spelled-out" version of analyses of covariance. Using a freshman class in the College of Arts and Sciences at Saint Louis University for illustrative purposes, the technique consists of the following:

(1) Following the completion of the school year, the credit-point-average (CPA) is determined for all students independent of departments from which grades were obtained.

(2) Measures available at the time students were accepted by the University are then correlated with end-of-year CPA's and with conventional methods used for selection of predictors to be used in multiple correlation and regression analyses. For the example being used, a combination of high school rank and entrance examination scores yielded a multiple coefficient of correlation of .682.

(3) The multiple regression equation is then used to "predict" the CPA expected for each incoming freshman student. The predicted CPA is referred to as the "potential index" for each student.

(4) For each department this potential index is identified for all students receiving a grade from the department. Thus, should 50 students have taken a course in English, the potential index for each of these 50 students would be determined.

(5) For each department the mean potential index is compared with the comparable mean CPA for grades assigned. Thus, should an English department assign 50 grades, giving an average 2.5 CPA, this 2.5 would be compared with the average potential index of the 50 students involved. Where the potential is lower than the grades assigned, there is some indication that the department is "too liberal" in its grading practices; where the potential is higher than the grades assigned, there is evidence that the department is "too tough" in its grading practices.

The first four columns of Table I illustrate the results from these types of analyses for one freshman class of Saint Louis University. In addition, within each department, the potential index was correlated with grades received. A high degree of relationship indicates that the "better" students were receiving the better grades given by the department.

Use of Results in Modifying Grading Standards

After the results become available, apparent inequities can more adequately be explained to the department administrators. It becomes apparent, for example, that department number 3 is grading "too tough." Grades assigned are considerably below the potential of individuals as determined through their overall performance in all course work. Department number 13 is giving grades which on the average are almost two letter grades higher than grades given the same students by

TABLE I

EVALUATION OF DEPARTMENTAL GRADING PROCEDURES

Coded Department	(1) Number of Students	(2) Mean Credit-Point Average	(3) Mean Potential Index	(4) Departmental Grading Index*
1	116	2.28	1.80	.48
2	169	2.13	2.06	.07
3	57	1.49	2.25	-.76
4	154	2.17	1.78	.39
5	111	2.18	1.81	.37
6	45	2.42	2.14	.28
7	437	2.25	2.03	.22
8	39	2.51	2.24	.27
9	100	2.03	2.38	-.35
10	87	2.10	2.00	.10
11	20	2.55	2.28	.27
12	354	2.19	2.08	.11
13	17	3.11	1.51	1.60
14	222	2.85	2.18	.67
15	46	2.15	2.24	-.09
16	320	2.13	2.08	.05
17	23	1.56	1.50	.06
18	105	2.19	1.81	.38
19	20	2.00	1.36	.64
20	47	1.95	2.13	-.18

* Difference between Mean Credit-Point-Average and Mean Potential Index.

other departments. In both of these examples the correlations were relatively lower than most of the other correlations. Not only was the "level" of the grading questionable, but also the relationship between grades and potential was relatively lower.

Other results can be interpreted to departmental administrators in a similar manner. Faculty in the departments can then be alerted to the results, and an effort can be made to "equalize" the standards.

Summary

The procedures outlined in this paper have resulted in a considerable improvement in equalization of grading standards by the various departments. While the method does not take into account differential aptitudes of individuals — which may influence interpretation of the results provided — it is likely that such factors would tend to be balanced as the number of students involved increases.

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THREE ERROR SOURCES IN COLLEGE GRADING

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THE PURPOSE of this study is to investigate certain distortions of the college grading process, distortions which have in commonone element: they are all considered to be matters of luck. The attempt is to isolate certain kinds of luck and then measure very roughly the extent to which they explain variance in grade-point average.

The term luck, or its synonyms, is seldom defined precisely; called chance, it is the subject of whole volumes of probability theory, but it still is used colloquially more than scientifically. Here refers to classes of events or more generally factors, which are 1) either unknown or unknowable, or 2) either uncontrolled or uncontrollable. Lightning is the usual example, for it is both uncontrollable and unpredictable, for most practical purposes. The outcome of battle between evenly matched armies is often attributed to chance because the relevant factors are so multitudinous, many unrecognized, many out of control, that the issue is unpredictable, and some trivial matter (e. g., the horseshoe nail) may appear to tip the balance.

The influence of the aleatory on achievement may be studied on the campus with some success because achievement is measured in the classroom 1) frequently, 2) in standardized units, 3) under controlled and relatively uniform circumstances, and 4) is reviewed and recorded systematically. Such appraisal of chance factors is hence simplified by the academic machinery, as opposed to the largely intuitive and informal processes by which parents, employers, spouses, and diplomats usually estimate achievement and the factors associated with it. It is no easier here than elsewhere to measure the influence of crude undifferentiated luck, like breaking an arm or losing a textbook just before exams. But certain classes of individually unpredictable events can be treated profitably on a probability level, and three of these will now be considered.

Hard vs. Easy Instructors

The first of the three, designated Factor A, refers to the toughness or easiness of the instructors which the student draws in the semesterly grab bag of registration. A tough instructor, called "low", is one who tends to give his students low grades, in contrast to his easy or "high" colleagues. The data, for a recent fall semester, are taken from the records of a rather large institution of good reputation. Two hundred and six instructors of freshman-sophomore (lower division) classes and 179 instructors of junior-senior (upper division) classes, gave grades as shown in Tables I and II. Each value is the average grade, converted to numbers, given to a given instructor's lower (or upper) division students by him, counting A's as four, B's as three, C's as two, D's as one, and F's as zero grade-points.

TABLE I

GPA'S GIVEN BY 206 INSTRUCTORS OF LOWER DIVISION COURSES*

Lowest Instructor	1.82 (High D)
Highest Instructor	3.88 (High B)
Range	2.06
Mean	2.50 (Middle C)
17th percentile	2.22
33rd percentile	2.36
Median	2.44
67th percentile	2.55
83rd percentile	2.82

*After excluding three instructors with fewer than 10 lower division students.

TABLE II

GPA'S GIVEN BY 179 INSTRUCTORS OF UPPER DIVISION COURSES*

Lowest Instructor	1.97
Highest Instructor	3.71
Range	1.74
Mean	2.79
17th percentile	2.42
33rd percentile	2.60
Median	2.76
67th percentile	2.96
83rd percentile	3.20

*After excluding 33 instructors with fewer than 10 upper division students.

It is apparent that an entering naive freshman who gets X instructor rather than Y may thereby be raising (or lowering) his expected grade by as much as two letters. Inasmuch as the array is not normally distributed the standard deviation (though computed to be .33) may not be used for estimating probabilities. If, however, the 206 instructors are divided into the top, middle, and low thirds, the median GPA of the low third (2.22 at the 17th percentile) is a reasonable estimate of the most probable grade of the student in the unlucky low third. Similarly, the median GPA within the top third (2.82 at the 83rd percentile) is a reasonable estimate of the most probable grade of the student in the lucky top third.

There is therefore an equal probability, .33, that a student will fall into the middle group, neither advantaging nor disadvantaging him, perceptibly, or into the top group with a probable advantage of .38 of a letter (2.44-2.82), or into the low third, with a probable disadvantage of .22 of a letter (2.44-2.22).

The usual student takes five three-hour courses. What is now the probability of his gaining the 38/100ths of a letter or grade-point in each of his five courses? It is obviously 1/3 multiplied by itself five times: 1/243, or .004115. The probability of similarly losing in all five is also .004115. On the basis that advantage in one course is cancelled by disadvantage in another (which is not exactly true, for .38 advantage would outweigh .22 disadvantage), the probability of gaining net advantage to the amount shown is given in Table III.

TABLE III

PROBABILITIES OF WINNING FROM +5 TO -5 ADVANTAGES BASED ON THREE EQUALLY PROBABLE OUTCOMES SCORED +1, 0, AND -1, OF FIVE INDEPENDENT EVENTS

Net Advantage	Fraction	Probability
5	1/243	.0041
4	5/243	.0206
3	15/243	.0617
2	30/243	.1235
1	45/243	.1852
0	51/243	.2099
-1	45/243	.1852
-2	30/243	.1235
-3	15/243	.0617
-4	5/243	.0206
-5	1/243	.0041
TOTAL	243/243	1.0001

An informed guess can now be made about the importance of Factor A in distorting the student's grade-point average as a measure of his achievement. It may be said that out of 1,000 entering freshmen, about four or so who have earned, say, 35 grade-points on 15 units of classes, will actually be credited with an extra .38 points per unit in all their five classes, so raising their grade-points from 35 to 40.7. About 20 will similarly gain in four of their five classes, raising their points from 35 to 39.6. Some 62 will win 3.4 extra points, and 123 will win 2.3 points. The same numbers may expect corresponding disadvantages, but each disadvantage costs only .22 points per unit, so the total losses will be only three-fifths as great as the corresponding equi-probable gains. There remain some 580 freshmen whose net advantage is no more than plus or minus one, with grade-point of no more than 1.14 or loss of .66.[1*]

Before leaving Factor A it is noted that similar but less distortion may be seen in the differing grading practices among the 32 departments of the institution, where the interdepartmental range of lower division GPA's is 1.37 letters, and even among the nine divisions, where there is a range of .7 letters. In the same semester the proportion of A's to all lower division grades given by the various departments varied from 0.0 percent to 50.6 percent. These differences do not necessarily imply unfairness in grading. Perhaps the assumption of unfairness is justified prima facie, but many reasons might rebut it. Still, from the standpoint of the naive student, such variation represents chance, unpredictable and certainly uncontrollable. (Students do not remain naive long, but their sophistication is irrelevant here unless they are able to register for instructors they choose, something they can typically do only at the beginning of registration.)

The "Cutting Point" Error

Factor B is likewise universally present, seldom noted however, or systematically examined. This is the discontinuity distortion resulting from the fact that students' grades are recorded in a series of steps, either A or B or C or D or F, while their true performance if measured accurately would proceed on a continuum. The error introduced by reducing a continuum to a five point scale could be computed, but it is chosen to compare a 15 point scale with a five point scale, both because it is intuitively clear, and because a 15 point scale is actually practical. For the latter one need only add the pluses and minuses to the central-valued letters, recording B-minus and B-plus, as well as B, for example.

The distortion lies in the fact that in the process of classification all individuals are treated in a class as if, contrary to fact, they all possess the criterion characteristic to the same degree. For example, student X may get two B's and three C's, while Y may get three B's and two C's. If however X's are high B's and C's, and Y's are low B's and C's, X may be performing better than Y, as their GPA's would show if they were calculated with different numerical values for the pluses and minuses. In grade-points, the student who earns a C-plus and is credited with a C has lost one-third of a point per credit unit, while the C-minus student has gained an unearned one-third point. Inasmuch as classes usually carry three units of credit, the student loses or gains one even grade-point per course, with each plus or minus unrecorded.

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*Footnotes will be found at end of article.

The probability calculations parallel those in the previous pages. The probability that a student's semester performance belongs in the upper third of any letter range, that is , with a "plus" letter grade is 1/3; the probability that he is in the lower "minus" third is 1/3; and the probability that he is in the middle no-modifier range is 1/3. Reading from Table III, the probability that a student will be advantaged in all five of his classes by five minuses being unrecorded is .0041. The probability of four such advantages is .02, and of three is .06, remembering that lost minuses and pluses can cancel each other out, and the advantages counted are net.

Returning now to the 1,000 entering freshmen, it may be expected that as a result of Factor B, four of them earning, say, 35 grade-points in their 15 units of classes may actually be credited with five extra grade-points, some 40 in all. Twenty may win four, 62 or so may win three, and 123 may win two. The same numbers may lose the same number of points, leaving some 580 neither advantaged nor disadvantaged by more than one grade-point.

Lucky and Unlucky Guessers

Factor C, logically prior to B, has been relegated to last place because it is a somewhat more involved story. It has to do with the actual process of measuring achievement through the customary written examination. The imprecision of such measurement is notorious among teachers if not among students. This is especially true of the essay examination. A number of studies have concluded that an examiner would rank order his essays quite differently a second time from the first, and that a second examiner, equally familiar with the material, would also rank order the essays differently from his colleague, with probably a still greater degree of disparity. The disparity is different for different kinds of material, e. g., science as opposed to humanities, and for different instructors.

We have chosen for our purposes to review the objective type of examination where this source of error is presumed to be at its barest minimum. And indeed it is, for objective type tests enjoy practically perfect reliability. Clerks may safely be entrusted with scoring, for scoring is mechanical—hence the widespread adoption of such tests, not only in the classroom but also in civil service, industrial personnel work, and generally in psychometrics. But perfect scoring reliability distracts attention from another source of error which has not, so far as we know, been examined with any care. The writer is not referring to the problem of validity, as serious as that is, but to the errors in rank ordering which result from the operation of chance, as students guess at the answers which they do not know.

To make the point clear, an extreme example is chosen. Assume, for ease of calculation, a class of 10 students, taking an examination of 100 true-false questions. Rank-ordering and grading are to be done on the basis of the number of correct answers (right minus wrong makes no difference). Assume further that the average student knows 90 of the answers, and the range among the students is from 85 to 95 "knows." On the remaining questions they guess. To carry out this little exercise the writer "guessed" the proper number of times for each student, using a table of random numbers, with odd numbers "correct" and even numbers "incorrect." The results of carrying out this simulated test situation three times are shown in Table IV.

One will immediately notice the discrepancies between the true rank ordering by the students' knowledge, derived from column 2, and the new rank ordering resulting from the addition of chance results, columns 5, 7, and 9. The correlations between the values in column 2 and those in columns 5, 7, and 9 are respectively -.101, .509, and .816. R^2 values for the latter two are .259 and .665, indicating that some 26 percent and 66 percent of the variation in the final scores is accounted for by variation in the students' knowledge. The balance, 74 percent and 34 percent, is accounted for by chance. In the first run the discrepancy is of course most marked of all, with a slight negative correlation between the "know" score and the final score.

In this fictitious situation the small size of the population, the narrow range of "know" scores, and the fortunes of the random numbers table led to an uncommon degree of distortion. A more realistic estimate of distortion was sought by setting up a series of situations more like the everyday classroom on examination day. Twenty-five examination patterns were worked out and analyzed, as reported in Table V. Each situation was alike in that there were 25 students, each taking a 100 question true-false test, grades determined by number of correct answers less the numbers of errors. The 25 classes were divided into five groups, of five classes each, by the postulated numbers of "know" answers, with highs from 95 to 75, medians from 80 to 50, lows from 70 to 30, and ranges from 20 to 60. In classes one through five, for example, the best student knew 95, and guessed 5; the median student knew 80 and guessed 20; and the lowest student knew 50 and guessed 50. Column five gives the product moment correlation coefficients from which the coefficient of determination may be computed. Although the data are surprisingly homoscedastic, rank difference coefficients also are given (column 6). The next four columns show the manner in which students' place in the rank order of the class are changed by their luck in guessing. Column 7 shows the mean change in rank, either up or down, and may be considered one measure of the error introduced by guessing. Column 8 shows the maximum change for any student in each class. Columns 9 and 10 show the mean absolute changes in rank for the top five and lowest five, respectively, of each class of 25 students; the upward movement by lucky poor students is about a third greater than the downward movement of unlucky good students.

Using as a measure of distortion the changes in rank order experienced by these 625 fictitious students in their 25 classes, such changes are found distributed as in Table VI. From this array of data it is seen that the two most favorably advantaged students moved upward in the rank order of their classes thirteen and one-half and 13 places, respectively. Forty-seven students moved upward by five or more places. The most seriously disadvantaged student fell 14 places, and 71 students fell five or more places. The curve describing this distribution of advantages and disadvantages is, though quite irregular, close enough to normal to permit calculation of probabilities from the table of the areas of the normal curve. The value of the standard deviation is 3.71. Generalizing, then, from this experience, the best estimate would be that 15.87 percent of a population of students would be advantaged by rising 3.71 places or more, and the same proportion would be similarly disadvantaged. One third, the luckiest third, would be advantaged by rising 1.60 or more places, and the unlucky third would be similarly disadvantaged by falling at least 1.60 places in the rank ordering of the class. To make the figures comparable to those found with Factors A and B, it may be estimated that the median gain or loss for those in the lucky or unlucky thirds, respectively, would be 3.59 places (corresponding to the values at the 17th and 83rd percentiles in the array of gains and losses).

The estimate of grade-point gain from gain in place-rank depends of course on grading practices. An ordinary distribution for lower division classes is 10 percent A's, 25 percent B's, 45 percent C's, 15 percent D's, and 5 percent F's, with a mean spread per letter of 20 percentage points. A rank order change of 3.59 places among a population of 25 corresponds to a change of 14.36 places in 100, which very roughly would be three-quarters of a letter, depending largely on the location of the change within the array.

We may hesitantly say then that the median advantage which the most fortunate third of a class will gain through Factor C is about 3/4 of a letter in any examination, with an equal loss for the least fortunate third. The impact of this on a student depends also on the number of examinations he has during a semester, for there will be an evening-out process going on, with usually some good luck compensating for bad, and vice versa (see the discussion below of this important point). If it is estimated that Factor C may raise or lower a student's semester grade by 1/3 of a letter, or one grade-point per three unit course, with respect to the top and bottom thirds of the class, this will be both a conservative estimate, and a most convenient one, inasmuch as it is identical in value with Factors A and B. In the discussion that follows one should, however, bear in mind that this may be an overstatement for C students, whose percentile scores cover such a wide range, and is probably an understatement for all others.

Turning for the third time to Table III, the probability is .004 that a student will enjoy this one grade-point gain, via Factor C, in each of five courses, .02 that he will in four of the five, and so forth.

Joint Effects of Factors A, B, and C

The time has now come to consolidate the data. What kinds of probability statements can be made of the joint effects of Factors A, B, and C?

If the probability of being in the most fortunate third in five classes with respect to any one factor is 1/243, or .0041, then the probability of being so fortunate for two factors simultaneously, in all five classes (gaining 10 advantage points) is (.0041) (.0041) or .000017, and the probability of such good fortune for all three factors, all five classes (with 15 advantage points) is $.0041^3$ or .00000007, more exactly, one out of 14,348,907. This lucky one in fourteen million students will have won but not earned, in one semester of five three-unit courses, five grade-points via Factor A, another five via Factor B, and a third via Factor C. If he is a middling C student, earning 35 points in 15 units of classes, he will actually rack up some 50 points on our records. Another equally unfortunate student will similarly lose.

These are indeed remote possibilities, hardly worth considering. Yet, for each student so heavily affected by the gift or loss of 15 grade-points, there will be 15 others winning or losing 14 (net) points, 120 who win or lose 13, and so forth.

Table VII gives the complete story toward which we have been moving. It looks as if perhaps about one out of eight of the students experiences no net gain or loss with respect to these three chance factors as defined (see column 3). Another quarter of them either gained or lost only a single point. Almost a third, 32 percent, may be expected to gain two or more points (see column 4), and another third to lose two or more. Likewise 13.5 percent may be expected to win at least four points, and another 13.5 percent to lose them.

TABLE IV

SCORES OF 10 STUDENTS ON THREE FICTITIOUS EXAMINATIONS
AS AFFECTED BY LUCK IN GUESSING

1	2	3	4	5	6	7	8	9
Subj.	No. he knows	No. he guesses	No. guessed right 1st run	Total score run 1	No. guessed right 2nd run	Total score run 2	No. guessed right 3rd run	Total score run 3
A	85	15	12	97	9	94	9	94
B	87	13	7	94	7	94	3	90
C	89	11	6	95	4	93	5	94
D	90	10	7	97	3	93	5	95
E	90	10	7	97	5	95	6	96
F	90	10	5	95	8	98	3	93
G	91	9	3	94	5	96	4	95
H	91	9	4	95	7	98	4	95
I	92	8	3	95	6	98	6	98
J	95	5	1	96	1	96	2	97

TABLE V

CHARACTERISTICS OF 25 FICTITIOUS CLASSES,
OF 25 STUDENTS EACH, SHOWING CHANGES IN
INTRA-CLASS RANK ORDER RESULTING FROM
GUESSING IN AN EXAMINATION

1	2	3	4	5	6	7	8	9	10
						Absolute Change Rank Order			
Class No.	"Know"Scores			Correl. Coef. r	Rank Dif. Coef.	Mean for Class	Max. in Class	Mean for	
	Max.	Med.	Min.					Top 5	Low 5
1	95	80	50	.915	.919	2.24	7.5	2.0	1.8
2	95	80	50	.866	.878	2.88	8.5	1.9	1.4
3	95	80	50	.888	.885	2.64	-8.0	1.6	2.6
4	95	80	50	.903	.887	2.56	-9.5	1.9	3.2
5	95	80	50	.907	.908	2.40	-6.5	2.1	1.8
6	90	80	70	.719	.696	4.72	13.5	3.2	4.6
7	90	80	70	.779	.844	3.28	8.5	3.9	4.3
8	90	80	70	.879	.886	2.28	-10.0	.5	1.4
9	90	80	70	.926	.882	2.68	-9.5	1.6	1.9
10	90	80	70	.803	.824	3.32	-9.5	3.3	3.2
11	90	60	30	.931	.922	2.12	-9.5	1.4	3.0
12	90	60	30	.839	.907	2.36	-8.0	1.5	2.2
13	90	60	30	.948	.944	2.04	5.0	.8	1.8
14	90	60	30	.960	.959	1.48	-6.5	.9	2.0
15	90	60	30	.924	.920	2.00	-9.5	1.1	3.2
16	75	60	40	.839	.862	2.76	7.5	2.8	2.6
17	75	60	40	.799	.790	3.84	-10.0	3.4	2.7
18	75	60	40	.798	.821	3.68	-9.0	3.2	2.1
19	75	60	40	.695	.740	4.28	13.0	3.0	3.0
20	75	60	40	.837	.800	3.12	-14.0	2.8	2.0
21	80	50	30	.917	.884	2.40	-9.0	.7	3.2
22	80	50	30	.913	.902	2.32	-8.0	1.0	2.8
23	80	50	30	.876	.799	3.48	-9.5	.4	5.1
24	80	50	30	.916	.915	2.24	-6.5	1.6	2.0
25	80	50	30	.888	.909	2.60	6.0	2.6	3.0

TABLE VI

CHANGES IN RANK ORDER OF 625 FICTITIOUS STUDENTS ORDERED INTO 25 ARRAYS ("CLASSES") OF 25 STUDENTS EACH RESULTING FROM CHANCE FACTORS IN GUESSING IN OBJECTIVE TYPE EXAMINATIONS

Amount of Change, in Places	Number of Students
+15, 15.5	0
+14, 14.5	0
+13, 13.5	2
+12, 12.5	0
+11, 11.5	0
+10, 10.5	0
+ 9, 9.5	1
+ 8, 8.5	8
+ 7, 7.5	12
+ 6, 6.5	11
+ 5, 5.5	13
+ 4.5	17
+ 4	24
+ 3.5	16
+ 3	22
+ 2.5	28
+ 2	33
+ 1.5	31
+ 1	53
+ .5	31
0.0	62
- .5	31
- 1	35
- 1.5	24
- 2	29
- 2.5	18
- 3	16
- 3.5	16
- 4	10
- 4.5	11
- 5, 5.5	23
- 6, 6.5	18
- 7, 7.5	8
- 8, 8.5	11
- 9, 9.5	8
-10, 10.5	2
-11, 11.5	0
-12, 12.5	0
-13, 13.5	0
-14, 14.5	1
-15, 15.5	0

TABLE VII

PROBABILITIES OF WINNING FROM +15 TO -15 NET ADVANTAGES BASED ON THREE EQUALLY PROBABLE OUTCOMES, SCORED +1, 0, AND -1 OF THREE INDEPENDENT SERIES OF FIVE INDEPENDENT EVENTS EACH

1	2	3	4
Net Advantage Points	Combinations of Events Giving Specified Points	Probability (Column Two Divided by 14,348,907)	Cumulative Probabilities
+15	1	.00000007	.00000007
+14	15	.00000105	.00000112
+13	120	.00000836	.00000948
+12	665	.00004634	.00005582
+11	2835	.00019758	.00025340
+10	9828	.00068493	.00093833
+ 9	28665	.00199771	.00293604
+ 8	71955	.00501467	.00795071
+ 7	157950	.01100781	.01895852
+ 6	306735	.02137689	.04033541
+ 5	531531	.03704331	.07737872
+ 4	827190	.05764829	.13502701
+ 3	1161615	.08095495	.21598196
+ 2	1477035	.10293711	.31891907
+ 1	1704510	.11879023	.43770930
0	1787607	.12458140	.56229070
- 1 to -15	6280650	.43770930	1.00000000
TOTAL	14348907	1.00000000	

It is of interest to note how inconsistent these figures are with the half thought-through notion that the more chance factors there are the more likely that the gains and losses will cancel, or at least shrink. The contrary is visibly true in these tables. The probability of being the most generously blessed person, lucky in all five classes, is in these examples 1/243 or .0041 for one factor, $.0041^2$ (or .000017) for two factors, and $.0041^3$ (or .00000007) for three factors. The probabilities of these substantially increasing maximal gains occurring do indeed shrink with the addition of more chance factors. But the probability of a given or constant gain occurring does not shrink; it increases. For example, the probability of gaining five advantage points as defined is, with respect to one factor, 1/243 or .0041 as stated. The probability of gaining five or more net advantage points through the operation of two factors is .040, and through three factors is .077.

It is important to distinguish here between an absolute number of advantages, i.e., grade-points, and a proportion, i.e., the grade-point average. As the semesters accumulate, chance will increase the absolute number of accidental grade-points lost or gained, but not in proportion to the total units attempted, on which the grade-point average is based. This does not, however, apply to increasing the number of chance factors operating in a given time period: for here the number of units of work is constant (not increasing with the passage of time) and hence any increase (or decrease) in grade-points, with the addition of more sources of chance, will also increase (or decrease) the grade-point average.

This is an exact parallel to flipping coins. In a million flips one gains or loses much more money than in 10, but the proportion of heads to flips approximates .500000 ever more closely: that is, the distorting effect of luck decreases, measured by that proportion.

Summary

Although the influence of fortuitous events generally may be impossible to estimate, even in the controlled situation of the classroom, at least an informed guess can be made as to the influence of certain classes of them. This has been done for three classes, (A) strictness of grading practices of the instructor, (B) loss of information inherent in the classifying process, and (C) guessing answers to objective type examination questions. The data do not permit calculation of the proportion of variance in grade-point average which may be so accounted for, but it is at least clear that the influence of these factors on recorded school achievement is far from trivial.[2]

FOOTNOTES

[1] This is, of course, the crudest of approximations, subject to many unknown or unmeasured errors. It may be worth pointing out, however, that the process of dividing instructors into only three classes, i.e., the top, middle, and low thirds, serves to underestimate the influence of this factor. Six classes of toughness, for example, would both increase the job of calculating and increase the apparent distorting effect of this factor on GPA as a measure of achievement.

[2] One may speculate on the influence of essentially these same error sources, i.e., kinds of luck, on non-academic achievement generally. This is done in the course of a more refined mathematical analysis of chance events in another as yet unpublished paper titled "A Probabilistic-Aleatory Approach to Achievement."

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STUDENTS' USE OF SUMMER TIME AT THE UNIVERSITY OF WISCONSIN

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WHAT DOES the average college student do during the summer? Does he go to summer school; travel; work; or simply take a vacation? If he works, how much does he save toward educational expenses? If he goes to summer school, what is the scope of the program he pursues? In short, what in fact are the present characteristics of the basic clientele available to a university as it seeks to offer optimum educational services throughout the year? What possible time and finances do students, enrolled during the regular year, have for summer attendance?

Such questions are fundamental to any discussion of academic calendar review; yet, surprisingly enough, they have not generally been asked in any systematic way. Educators sometimes have operated on hunches based upon partial data. Many hunches turn out to be incorrect when exposed to the light of actual statistics.

This is a report of what one university, The University of Wisconsin, Madison campus, discovered when it sought information on summer use of time on the part of its students in order to evaluate more effectively institutional policies and plans.* Every student registering on the Madison campus of The University of Wisconsin in the fall of 1961 was asked to complete a short punched card questionnaire. Some 94 percent of the students completed the cards. From the 18,847 usable cards, a variety of pertinent tables was constructed.

At the outset, let it be said these tables reaffirm a fact well known to education researchers; there is no such thing as a "typical student." Distinctions must be drawn on the basis of certain characteristics.

Summer Activities

The summer activities of University of Wisconsin students enrolled during the 1961-62 regular year centered around employment, summer school attendance, vacation at home or abroad, military camp, independent research, and a miscellany of other activities. The average student was engaged in a combination of activities. The way he divided his time differed markedly depending on a variety of factors.

By Class Level. There were notable differences between graduate and undergraduate students in their patterns of summer activities. More undergraduate students were employed during the summer than were graduate students — 85 per cent contrasted to 59 percent. The opposite was true for summer school attendance — undergraduate, 19 percent; graduate, 53 percent. The average undergraduate student was employed a week longer than was the average graduate student. Employment for the undergraduate and summer school for the graduate student did not, however, account for as much of the summer as might be expected. Only 60 percent of the undergraduate students were employed more than eight weeks, and only 44 percent of the graduate students had five or more weeks of summer school. Some 29 percent of the undergraduate and 34 percent of the graduate students had more than four weeks of vacation.

Undergraduate students showed increasing participation in summer school at each level from the freshman to the senior year: freshmen, seven percent; seniors, 33 percent. Continuing undergraduate students were more apt to attend summer school than were new advanced standing students or new freshmen.

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* For the complete report see L. J. Lins, C. A. Schoenfeld, Allan P. Abell, F. Chandler Young, *Use of Time during 1961 Summer by Students Registered during 1961 Fall Semester, The University of Wisconsin, Madison Campus* (Madison: The University of Wisconsin, Office of Institutional Studies, May, 1962).

By Sex. Undergraduate men were more apt to work than were undergraduate women: 91 percent versus 77 percent; there was a greater decrease in the proportion with summer employment from the freshman through the senior years for women than for men. A slightly higher proportion of graduate men than graduate women was employed: 61 percent as compared with 51 percent. Graduate and undergraduate men with employment worked about one week longer on the average during the summer than did the women.

Undergraduate women and graduate men were somewhat more apt to attend summer school than were the men or women in the other respective classifications. Among professional students, a higher proportion of men than women attended summer school.

Within each classification, men attending summer school had less vacation time while women attending summer school had less weeks of employment.

By Marital Status. The married undergraduate student was more apt to attend summer school than his single counterpart, less apt to take a vacation, and somewhat less apt to be employed. A similar pattern was exhibited by married graduate and professional students.

By College or School. Undergraduate summer employment ranged from 96 percent in the College of Agriculture to 64 percent in the School of Nursing. Undergraduate summer school attendance ranged from 58 percent in Nursing to 10 percent in Agriculture.

Commerce had the largest percentage of graduate students with employment (68%) and the lowest percentage with summer school attendance (34%). The School of Pharmacy had the highest percentage in summer school (74%) and the lowest percentage with employment (44%). Graduate students in Agriculture had a relatively high participation in both summer school (73%) and employment (60%).

By Home Address. Students from Madison and from out-of-state were somewhat more inclined to attend summer school than were students from other parts of the State of Wisconsin. Students from Wisconsin were more apt to be employed during the summer than were non-Wisconsin students. This may be due to varied needs for summer earnings in order to continue in the fall.

By Cumulative Grade-Point Average. A slightly greater proportion of undergraduate students with low cumulative grade-point averages attended summer school than of students with high cumulative GPA's. The size of the difference does not appear great enough, however, to weaken the quality of the summer session student body.

Summary. There are 14 weeks between the close of the spring semester at Madison and the opening of the fall term. Of these 14 weeks, the composite undergraduate male spent nine and one-half weeks in gainful employment, two and one-half weeks on vacation, one week in summer school, and the balance in a variety of other activities. His coed counterpart worked for seven and one-half weeks, vacationed for four and one-half weeks, spent one and one-half weeks in school, and divided the balance of time among miscellaneous activities. The composite graduate student exhibited a different pattern: male, five and one-half weeks of employment, four weeks of summer school, and three weeks of vacation; female, four and one-half weeks of vacation, four weeks of employment, and three and one-half weeks of summer school.

Looked at another way, 91 percent of the UW undergraduate men, 77 percent of the undergraduate women, 61 percent of the graduate men, and 51 percent of the graduate women reported being engaged for a time in some type of summer employment. Summer school attendance involved 16 percent of the undergraduate men, 24 percent of the undergraduate women, 48 percent of the graduate women, and 54 percent of the graduate men.

The majority of the undergraduate students (80%) had some combination of summer activity that included employment and vacation while only 19 percent had a combination that included summer school. In contrast, 53 percent of the graduate students included summer school in their summer activities.

Summer School Attendance

As has been cited, summer school attendance was related to classification: undergraduate students, 19 percent; professional students, 25 percent; graduate students, 53 percent. As might be expected, the majority of UW students enrolled during the regular year and who took summer course work did so on the Madison campus: undergraduate, 12 percent; professional, 22 percent; graduate, 47 percent. Other institutions attracted measurable numbers of UW students: undergraduate, five percent; professional, two percent; graduate, six percent. Only a very small number of Madison campus students pursued summer work either at the University of Wisconsin-Milwaukee, through correspondence study, or at one of the University Centers.

There was a general trend from the sophomore to the senior level of decreasing summer school attendance on campuses other than The University of Wisconsin at Madison, with an increase from the freshman to the senior level in UW correspondence study, and a much greater increase in proportions attending the Madison summer sessions. These trends were more pronounced among women than among men.

Credits Earned by Class Level. Among the students who earned academic credits during the summer, the mean varied from 6. 6 for professional, to 5. 6 for undergraduate, to 4. 1 for graduate students. Among undergraduate students, freshmen had the lowest mean and seniors the highest.

By Sex and Marital Status. Women tended to carry more credits than did men in all classifications with the exception of law and medicine. Of the 1, 548 graduate men in the questionnaire group who attended the Madison summer sessions, less than half earned more than three credits.

The influence of marital status upon total credits earned was insignificant.

By College or School. Total earned credit means and medians by college or school for undergraduate students were fairly uniform. Graduate student medians varied from six credits in Education and Home Economics to two credits in Agriculture.

By Home Address and Cumulative Grade-Point Average. Only minor differences were exhibited between Wisconsin and non-Wisconsin students in total earned credit means and medians. Cumulative grade-point averages likewise appear to have had no significant effect on the number of credits carried.

Summary. The average UW undergraduate male registered at Madison during the first semester earned . 88 academic credits in summer; the undergraduate female, 1. 32; the graduate male, 2. 09; and the graduate female, 2. 28.

Among those students reporting summer school attendance, the typical undergraduate man and woman each earned six credits; the graduate woman, five credits; and the graduate male, three credits.

Summer Employment and Savings

Employment accounted for the greater portion of the summer activity of the majority of University of Wisconsin students, but there were wide variations in amounts of savings.

By Class Level. Among the undergraduate students, 86 percent were employed, but 14 percent had no savings, leaving 72 percent with an economic profit for the summer. Ninety percent of the savings were within a range of $97 to $919. The median savings for the undergraduate students employed was $379; the mean was $419. The average savings for all undergraduate students was $300. The freshman group had the lowest mean savings, the junior group the largest.

Among graduate students, 60 percent were employed, but 29 percent had no savings, leaving 31 percent with summer savings. The range of 90 percent of the savings was from $101 to $1, 027. The median savings for graduate students employed was $352; the mean was $428. The average savings for all graduate students was $132.

Among professional students, 86 percent were employed; 24 percent had no savings, leaving 62 percent with summer savings. Ninety percent of their savings were within a range of $145 to $1, 200. The median savings for those employed was $515; the mean was $548. The average for all professional students was $339.

By Sex and Marital Status. Mean savings were higher for the men than for the women in all three classifications. A higher proportion of single students than of married students had savings; however, the savings mean of single students was less.

By College or School. The undergraduate students in Engineering and Agriculture had the highest mean savings. Commerce undergraduate students had the highest median. The Engineering group also had the highest mean savings among graduate students. These differences may be more a function of sex than of college or school in which enrolled.

By Home Address. The smallest percentage with summer savings was the group of undergraduate students from regions other than Wisconsin. The graduate student group from Wisconsin areas other than Madison had the highest mean savings of any group. Differences in savings probably were due largely to the varying needs for money to continue education during the regular year.

By Cumulative Grade-Point Average. The lower a student's cumulative grade-point average, the more apt he was to be employed in the summer and and the less apt he was to have savings. The differences between students with high CGPA's and those with low CPGA's were not marked, however.

Summary. There was a wide variation by class in the typical summer savings of the students with savings and enrolled at Madison during the first semester 1961-62, with the savings being $308 for graduate females, $406 for graduate males, $294 for undergraduate females, and $437 for undergraduate males.

Summer Savings Reserved for Education

The majority of University of Wisconsin students with summer savings applied most of these savings toward educational expenses.

By Classification. The undergraduate group had the greatest percentage of persons who reported savings but who did not intend to use these savings for education (7%). However, the undergraduate group still had the highest percent (65%) with applied savings; the undergraduate mean was $396. The graduate group with savings exhibited the greatest difference between mean savings ($428) and applied savings ($391), while professional students had the largest mean applied savings ($513).

By Sex and Marital Status. A smaller percent of the women than of the men had applied summer savings. Married students were able to save less for educational expenses than were single students.

By College or School. The pattern of proportions with applied savings by college division closely paralleled that of the proportions with savings. Undergraduate students in the School of Home Economics exhibited the greatest disparity between savings and applied savings; in the graduate student category the difference was most marked among students in Education.

By Home Address. A higher proportion of the undergraduate students from regions other than Wisconsin had savings not applied to educational expenses than of undergraduate students from Wisconsin. The Other Wisconsin graduate group, like the Other Wisconsin undergraduate group, had the greatest percentage of individuals with applied savings.

By Cumulative Grade-Point Average. The higher a student's cumulative grade-point average the less apt he was to save toward educational expenses. The medians ranged from $353 for undergraduate students with 3.00 or over to $400 for undergraduate students with 2.29 or under. A higher proportion of the high cumulative grade-point average group than of the low cumulative grade-point average group, however, had some savings.

Summary. The amounts applied toward educational expenses by the "average" student were as follows: graduate women, $81; undergraduate women, $161; graduate men, $118; and undergraduate men, $317. Among students reporting summer employment, the median savings toward educational expenses were: undergraduate men, $414; graduate men, $335; graduate women, $285; and undergraduate women, $265.

Generalizations

The data reported here can be interpreted in several ways. It was to answer a specific question, however, that the study was undertaken. These generalizations will confine themselves to that topic, namely, how many University of Wisconsin students might be available for year-around study?

Undergraduate Students. This study reaffirms the findings of other studies that, for a significant number of University of Wisconsin undergraduate students, summer employment savings may mean the difference between continuing or not continuing in school. Some 65 percent of the undergraduate students had applied savings, and half of these had savings of approximately $346 or more; this means that for at least 4,500 undergraduate students (32%) summer school attendance would have represented a serious loss in income.

On the other hand, this study reveals a significant number of UW undergraduate students for whom summer study would seem to have been economically feasible given modest scholarships and/or loans. There were nearly 4,000 undergraduate students with no summer savings and almost 5,000 with applied savings of less than $400 each. Of the students surveyed, only 2,330 spent more than four weeks in summer school, leaving a net potential of over 7,000 undergraduate students (52%) for whom eight weeks or more of summer school might have been feasible, given suitable curricula and motivation.

These summer school potentials were not evenly distributed by class, however. In general, there was a steady decline in their numbers from pre-freshmen through seniors. Nor were they evenly distributed by sex and home address. Women earned less credits and money than men; nonresident students earned less credits and money than resident students did.

Graduate Students. While graduate students now make use of The University of Wisconsin, Madison campus, summer sessions to a much greater degree than undergraduate students do, here, too, there would seem to be an untapped potential. Over 70 percent of the graduate students reported no applied summer savings; an additional 16 percent had applied savings of under $400. Subtracting those who now spend over four weeks in summer school leaves a balance of 1,766 (43%) for whom eight weeks or more of summer school might have been possible. It should be kept in mind, however, that lack of summer savings of graduate students not attending the summer sessions may have been due to factors such as debt retirement, degree research away from the campus, and family responsibilities. A high proportion were married. Many had assistantships during the academic year but not during the summer.

For the 12 percent of the graduate students who had applied savings of $400 or more, summer school attendance would seem to present a serious economic obstacle.

Professional Students. In general, professional students followed the undergraduate student pattern. Their numbers, in any event, were not significant.

Summary. From this study it would seem that there may be quite a number of University of Wisconsin students not now making optimum use of the 14 weeks of summer time in terms of either money or credits accumulated. Whether this potential can in fact be translated into summer attendance on the Madison campus will probably hinge on a variety of socio-economic and personal factors which educational institutions have only begun to explore. On the basis of present knowledge, it is not safe to assume that larger numbers of students would or could attend a summer session of any particular length or that establishing a summer session longer than any of the present sessions would automatically attract a satisfactory enrollment. It appears quite certain that to increase enrollments substantially during the summer it would be necessary to expand scholarship and/or loan programs and to explore other means of developing greater student utilization of summer offerings.

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STUDENT REACTIONS TO UNIVERSITY OF WISCONSIN SUMMER SESSIONS

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PERHAPS NO ASPECT of American higher education is presently under more scrutiny than the college and university summer session.[1]* Perennially the topic both of "enthusiastic speeches"[2] and of "a great many suspicions,"[3] the summer session today is very much on the minds of those seeking optimum utilization of campus facilities around the calendar in the face of rapidly increasing enrollments.

The Study Background

As one of the institutions seeking to discover ways of maximum use of the summer as an integral part of year-around operation, the University of Wisconsin undertook in the summer of 1961 a depth analysis of its Madison campus summer students—their backgrounds, their aspirations, their needs, and their assessments. A more complete understanding of present summer session functions should aid in formulating future summer session policies.

While what emerges from any self-study of Wisconsin summer student posture and attitude may reflect geographic and psychological bias, this report should contribute to the literature on summer session problems and possibilities. At a minimum it identifies areas meriting further research; hopefully, it also identifies guidelines for future administrative action.

Study Framework

The study itself consisted of controlled interviews with 184 students selected at random from approximately 9,000 students enrolled in the 1961 Summer Sessions at Madison. On the basis of known factors, the sample was judged to be sufficiently representative of the population as a whole to warrant making generalizations based on the survey data. (A similar survey instrument was employed at the University of Minnesota in the summer of 1956.[4] The two studies offer interesting points of substantiation and divergence.)

The questionnaire employed sought answers to four broad questions:

1) Who is the summer student? What are his personal, educational, and vocational characteristics? Particularly, in what ways is he different from the regular-year student?

2) What is the place of summer session work in the student's total educational program? Why do students attend the Summer Sessions and through what sources do they secure information about the summer programs? How does summer session work contribute toward degree progress?

3) How do students appraise their summer session experiences? What do they think about their courses? How do they judge them in comparison with those they have taken during the academic year? What are their reactions to other phases of the summer session program? What do the students believe to be particularly outstanding or particularly unsatisfactory about the Summer Sessions?

4) What length of session has the greatest utility? Is a four-week session too short; a summer semester too long? Does the eight-week session meet student needs? What opening and closing dates are most convenient?

In the following summary, percentages are rounded to the nearest integer. For more precise figures and a more complete treatment of the findings, the reader is referred to the complete report.[5]

The Summer Student

The "typical" summer student bears little resemblance to the conventional image of "Joe College." He is quite apt to be married. He is over 24 years of age. He is working toward an advanced degree. He either went to school or taught school the year before. He has attended summer school before or plans to go again. He may work besides attending classes. He prefers "the reading room" to other Wisconsin Student Union activities.

Classification

There are striking differences between the summer and winter student bodies at Madison on the basis of class level.

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*Footnotes will be found at end of article.

During the regular year, students working toward graduate degrees constituted about 23 percent of the total students enrolled. In summer the Graduate School percentage doubled— to 46 percent. (As a matter of fact, if the special students taking advanced work are included, over half of the summer students are at the graduate level. There were about as many graduate students enrolled on the Madison campus in summer as in winter despite the differences in total enrollment.)

Undergraduate degree candidates at the University constituted 72 percent of the winter population but only 28 percent of the summer. There were very few non-degree candidates during the regular year while during the summer over 24 percent of the students were not working toward a UW degree.

In terms of present functions, the heavy graduate enrollment in the summer dictates a curriculum rich in opportunities for independent investigative work in library and laboratory. In terms of future policies, the best chance for summer enrollment expansion may lie in encouraging an increasing number of undergraduates to continue on campus the year-around.

Sex and Marital Status

There was a slightly greater percentage of women in the summer student population than in the winter–38 percent and 34 percent respectively. The proportion of married females increased from three percent in winter to eight percent in summer; the percentage of single females was the same–30 percent. The percentage of married males increased from 16 percent in winter to 31 percent in summer. The percentage of single males dropped from winter to summer–from 50 percent to 31 percent.

These data are particularly relevant to persons responsible for housing the summer student body. Since a high proportion of single males work during the summer to provide some of the funds for regular year enrollment,[6] it probably will be necessary to supply scholarship and loan funds to replace summer job incomes if more single males are to attend the Summer Sessions.

Home Address

The percentage of students from Dane County was not markedly different in winter and in summer. The percentage of students from Wisconsin counties other than Dane decreased markedly from the fall semester to the Summer Sessions (47% and 38%). The rise in percentage of out-of-state students, from 30 percent to 37 percent, is accounted for largely by the fact that the University attracts many students from other institutions for the summer only.

Age

The summer student was strikingly older than his winter counterpart. In total, 49 percent of the summer student body was 25 years of age or older, contrasted to 19 percent in the regular year. The summer undergraduate was older than the winter undergraduate; in summer 72 percent were over 19, in winter 48 percent were. The summer graduate student was older than the winter graduate student; in summer 71 percent were over 24 years of age, in winter 61 percent were.

These statistics are of special significance to those planning summer co-curricular activities.

Occupation

What were the students doing during the year immediately prior to their summer attendance? Overall, 59 percent attended the University of Wisconsin, 11 percent attended another institution, 23 percent were teaching and/or were counselors or administrators, and four percent were employed in a non-school occupation. Each student classification departed from this average, however. The undergraduate student body was made up predominantly of continuing University of Wisconsin students (84%). The graduate students were either continuing University of Wisconsin students (61%) or were teachers and administrators from high schools and colleges (35%). Nearly half of the Summer Session Specials were students from other colleges.

Degree Work

As of July 1, 1961, almost two-thirds of the total sample held some degree. In fact, 40 percent of the graduate students had a master's degree. Of the total students in the sample, 86 percent were working toward a degree. Of the graduate students, 42 percent were working toward a doctorate. Thirteen percent of the sample planned to earn a degree during the 1961 Summer Sessions. Only two percent of the regularly enrolled UW undergraduate and graduate students expected to earn a degree at a college or university other than Wisconsin; 47 percent of the specials did.

Summer Session Experience

A majority of the graduate students had attended a previous summer session at Madison; a majority of the undergraduates and specials had not. Of the total group, 34 percent had attended a summer session at another institution; 15 percent of these had been in attendance on three or more campuses. Many of the persons attending the 1961 Summer Sessions expected to attend a future University of Wisconsin summer session.

Summer Employment

Of the students in the sample, over one-third had jobs in addition to attending classes: 45 percent of the undergraduate, 31 percent of the graduate, and 31 percent of the special students. Of the students with jobs, 65 percent earned less than $400, and 17 percent earned $600 or more. Graduate students earned more than undergraduate or special students.

Whether or not a student worked and how much he earned had little or no correlation with the number of courses he carried for credit.

Extra-Curricular Activities

Outdoor sports were popular with 71 percent of the students, with swimming being the most popular followed by tennis, golf, sailing and fishing. A like percentage of students was interested in plays, concerts, ballets, films, lectures, and art exhibits. Forty-four percent of the students expressed an interest in "Union Activities, " with the largest number of votes going to "the reading room. " All types of extra-curricular activities were more popular with undergraduate than with graduate and special students.

Summer Student Goals

Students obviously come to the Summer Sessions for a variety of reasons. While a psychologist could speculate that an individual might not either recognize or be willing to verbalize his real reason, it is nonetheless pertinent to ask him.

Reasons for Coming

It was found that nearly all summer students (90%) cited a "most important" reason related to an educational purpose: 39 percent, to accelerate educational progress; 17 percent, to take courses as a part of a balanced year-around program; 11 percent, to complete a program of studies largely through summer attendance; and 12 percent, to take work with a particular professor or to use the library or laboratory facilities.

Some 60 percent also gave a "most important" professional reason for attendance, the two most common being "to obtain a graduate degree" and "to enrich my professional background by further studies. "

Only a third of the students listed a "most important" personal reason for attendance, the three most common being "to take courses purely for personal interest, " "to be able to live at home while attending summer sessions, " and "to meet new people. "

Sources of Information

How do students obtain information about the Summer Sessions? Taken as a group, three informal means of communication account for 45 percent of the responses–talks with UW staff members, talks with students who have attended, and previous personal experience. The formal means of communication, accounting for 42 percent of the dissemination, is a combination of reading the Summer Sessions Bulletin and writing to the Summer Sessions Office for information. These data suggest that The University of Wisconsin summer program is its own best advertisement when supported by adequate literature.

Student Assessments

In the literature of higher education, summer instruction has at times been unkindly dealt with.[7] Despite growing evidence to the contrary,[8] there remains the lingering suspicion in some academic quarters that the summer session is a vermiform appendage where second-rate professors offer second-rate courses to second-rate students.

What do the students themselves think about this? It has already been pointed out that they are characterized by maturity and intellectual drive. Are they not in a valid position to contribute to Summer Sessions assessments? Many educators think they are.[9]

General Evaluation

The students were asked to estimate the value of attending the Summer Sessions in terms of their chief reasons for attending. They were given five choices: very well satisfied, fairly well satisfied, uncertain of the value, somewhat dissatisfied, and very dissatisfied. Of the students who replied to the question, 94 percent said they were either fairly well or very well satisfied. None of the students expressed complete dissatisfaction. A somewhat higher proportion of UW degree candidates expressed complete satisfaction than did special students.

Course Assessments

One of the questions asked was, "How much are you learning?" In every University college or school 76 percent or more of the students indicated that they were learning as much or more in their summer courses as they had learned in other courses taken previously. Some 40 percent of the students said they were learning more in summer. The responses of the UW degree candidates generally were more enthusiastic than were those of the special students.

The students were also asked, "How interesting are your courses?" Over 80 percent of the students felt that the Summer Sessions courses were either above average, more interesting than most, or among the most interesting classes they had ever taken. There were no great differences between UW degree candidates and special students.

A third question asked was, "How would you rate the teaching procedures?" Again, over 80 percent of the students rated summer teaching average or better, and 23 percent said the instruction was "a model of good teaching." UW undergraduates tended to be slightly more complimentary than UW graduate students.

In response to the question, "Would you recommend this course to a close friend whose interests are like yours?" only 13 percent said they would not.

Comparisons

The continuing students in the sample were asked to compare summer courses with regular year courses at Madison. In terms of work requirements, nearly half said there was no difference, over one-fourth felt summer courses were more difficult, and over one-fourth said summer courses were less demanding. In terms of quality of instruction, three-fourths felt that professor performance was about the same, 18 percent thought it was better in the summer, and seven percent said it was generally poorer in the summer. In terms of amount learned, over half said they had learned about the same, less than one-fourth said they had learned more, and one-fourth said they had learned less. In general, UW undergraduates tended to rate summer courses higher in comparison with regular year courses than did UW graduate students.

Notable Satisfactions

Each student was asked if there was any phase of the summer program that he found particularly outstanding. The majority of students did not respond to this question. Among those who did, the most frequently cited factors were "diversified offerings," "general atmosphere and organization," "scheduling of classes," and "cultural and social acitivities."

Notable Dissatisfactions

Each student also was asked if there was any phase of the summer program that he found particularly unsatisfactory. Here again the majority of students did not respond. Among those who did, the most frequently cited factors were "concentrated instruction," "crowded schedule," and "unsatisfactory teaching."

It is interesting to note that some of the elements that were listed by some students as unsatisfactory, were listed by others as outstanding. Some of the responses were picayune, others thoughtful. Taken together, they do not seem to indicate any overwhelming agreement on either highlights or problem areas.

Missing Courses

The fact that the summer session administrator is dealing with a host of individual needs and slants became strikingly apparent when the students were asked to list any courses they would like to have taken but which were not offered in the Summer Sessions. Out of 64 responses, 61 different courses were suggested, ranging from advanced electrical engineering to Swahili. The only duplications were in the areas of botany, home economics, and history of education. The requests document both the need for a rich and varied curriculum and the difficulty in maintaining one that satisfies everyone.

Summer Session Patterns

"How long should a summer session be?" is a question being discussed frequently by educational administrators. Students have their own ideas.

Four-Week

Nearly half of the students consulted expressed an opinion on the length of the four-week session. Of those who did, only eight percent said it was "just right for my needs." Another 32 percent said it was "adequate." The remaining 60 percent felt that a four-week course was too short or too concentrated. The majority recommended that the four-week session start in June.

Eight-Week

Over two-thirds of the students indicated that a half-semester session was "just right" for their needs. However, 16 percent of the graduate students said it was too short. Over half of the students were satisfied with the present starting date although one-fourth would prefer to have it start earlier.

Twelve-Week

Over a third of the students in the sample said they would attend a 12-week session because it would allow them to carry more credits; 10 percent said "maybe." Nearly half of the students felt 12 weeks would be "too long or inconvenient." Sixty percent of the students felt a 12-week session should start as early as possible in June. Significantly, more UW degree candidates were in favor of a 12-week session than were special students.

Summer Semester

Slightly less than a third of the students in the sample said they would attend a summer semester, and another eight percent said "maybe." Half of the students said "no." A higher proportion of UW degree candidates expressed an interest in a summer semester than did special students.

Were the same questions to be put to a group of students not in attendance in summer, the reactions might be quite different.

Interpolating from the data at hand, it is expected that many students would find acceptable a summer session pattern that offered a longer term in the form of two consecutive short terms.

Generalizations

Any study based on a two percent sample has its limitations, as does any study based on the subjective judgments of the interviewees. Granting these pitfalls, the study here reported, however, would seem to offer certain clues to administrative decisions and to further research about the Summer Sessions.

The growing impression that summer session students are more mature than those attending during the academic year is supported by the findings reported in this paper. The summer student is older. He is more apt to be married. He is likely a candidate for an advanced degree. He has sharply defined educational goals. His high academic motivation makes him less susceptible to campus diversions.

From the perspective of the student body enrolled, the Summer Sessions serve first of all as an integral part of a year-around program for students in continuous attendance. Secondly, particularly for Wisconsin teachers and school administrators, the Summer Sessions offer the only chance for periodic professional training. Thirdly, a more special function is the provision of an opportunity for college students and teachers from around the country to become acquainted with Wisconsin skills and resources.

The reactions of Summer Session students to the total program and to individual courses provide considerable evidence that the Summer Session is a worthy expression of university enterprise in maintaining academic standards and meeting student needs.

Current student opinions on a longer summer session indicate that while there is a measurable "built-in" clientele for a summer semester, a decided change of attitude will have to take place in a majority of students before summer session enrollments would approach those in the regular year. For a significant number of students now in attendance, only a half-semester would fit their schedules.

At least five research areas suggest themselves:

1) With respect to length, is there in fact an optimum instructional period?

2) What are the economic, social, and psychological barriers to increased summer attendance?

3) With respect to academic qualifications, what types of students typically avail themselves of summer offerings?

4) What are the past, present, and potential contributions of the summer session to the academic careers of degree candidates?

5) Are there opportunities for fruitful inter-institutional cooperation in curricular offerings?

At least two broad administrative guidelines emerge: 1) a consciousness of the Summer Sessions as an integral part of the year-around operations of the institution, and 2) a sympathy for the unique role of the Summer Sessions in meeting special needs.

FOOTNOTES

1 Clarence A. Schoenfeld, "The Summer Session Comes of Age," The Shape of Summer Sessions to Come (The University of Wisconsin: Summer Sessions Office, 1961), p. 1.

2 John E. Stecklein, Mary Corcoran, and E. W. Ziebarth, The Summer Session: Its Role in the University of Minnesota Program (University of Minnesota: Bureau of Institutional Research, c. 1958), p. 16.

3 Thomas E. Crooks, The Summer School in Higher Education (New York: Columbia University, 1961), p. 4.

4 Stecklein, Corcoran, and Ziebarth, op. cit.

5 L. J. Lins, C. A. Schoenfeld, Robert A. Rees, Allan P. Abell, Student Reactions to 1961 Summer Sessions, The University of Wisconsin, Madison Campus (Madison: The University of Wisconsin, Office of Institutional Studies, April 1962).

6 L. J. Lins, Student Expenses and Sources of Income 1960-61 Academic Year, The University of Wisconsin, Madison Campus (Madison: The University of Wisconsin, Office of Institutional Studies, October 1961).

7 Charles S. Slichter, " 'Debunking' the Master's Degree," in Association of American Universities Journal of Proceedings and Addresses of the 29th Annual Conference, University of Chicago Press, 1927, pages 107-11.

8 Stecklein, Corcoran, and Ziebarth, op. cit.

9 Martha B. Lucas and I. D. Weeks, quoted in Clarence A. Schoenfeld, "The University and Its Publics," Harpers, 1954, p. 20 and p. 45.

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